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VOL. XXII, NO. 3

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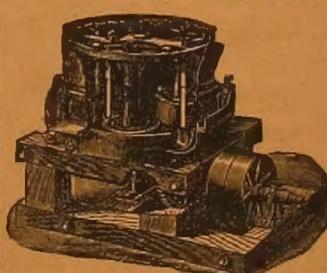
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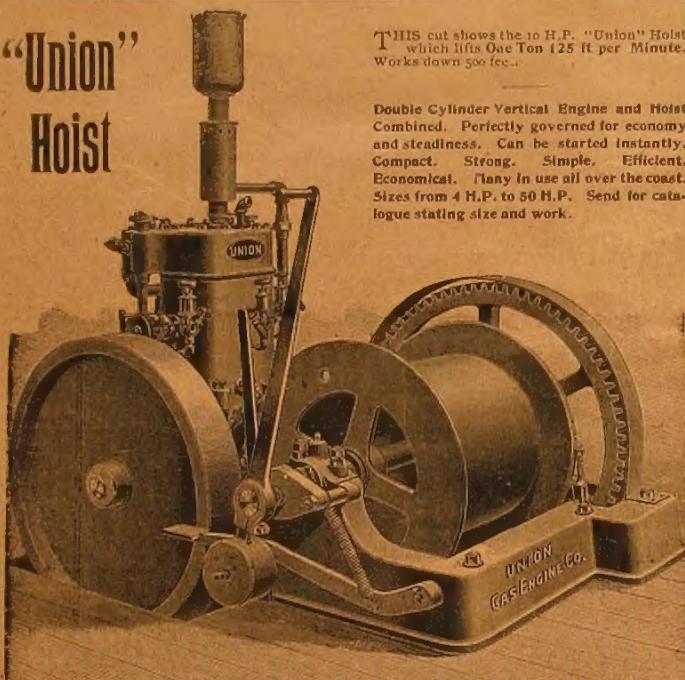
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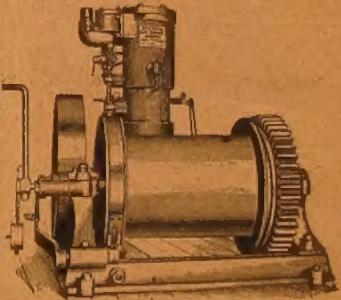
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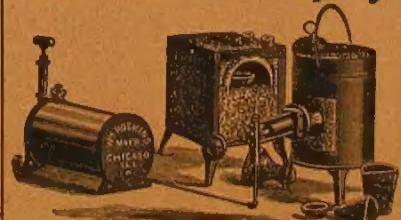
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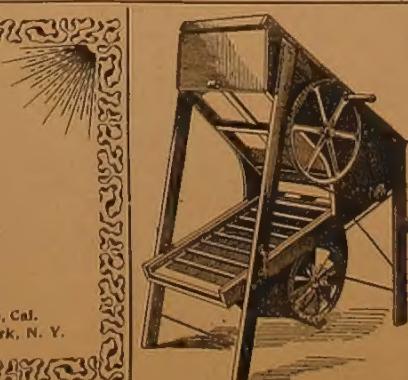
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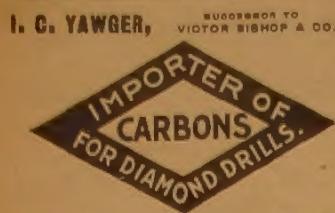
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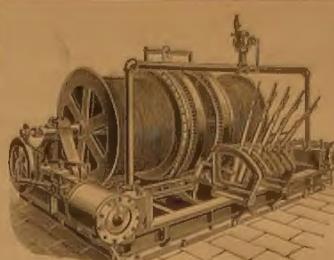


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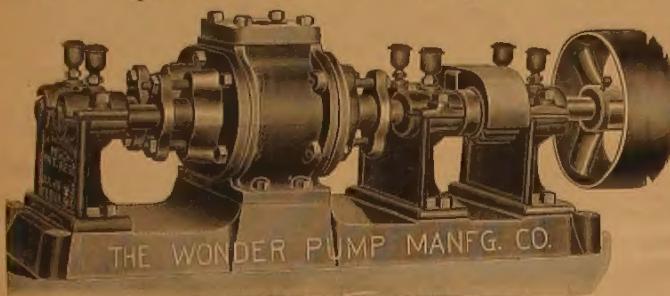
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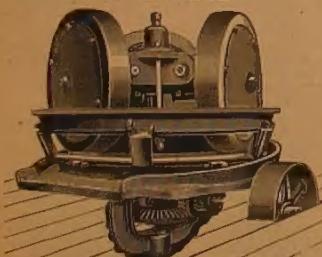
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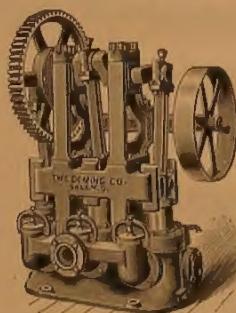
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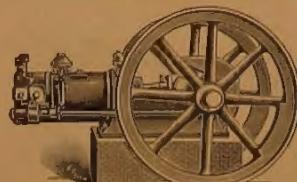
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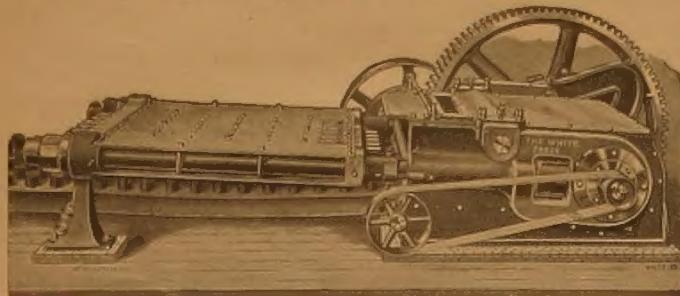
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moved that the President appoint a delegation of 100 members at large to represent the Association in the Convention on Water and Forestry to be held in this city on November 10. The motion received a unanimous vote and then another made by Delegate Wehe of Sierra, to appoint a committee of five on county organization, was adopted.

The election of officers was declared in order by President Neff, according to the program decided upon, and nominations began.

Shoecraft, of Nevada, was the first to rise from the body of delegates, and in a ringing speech placed in nomination for president E. C. Voorhies of Amador County. Great applause greeted the mention of Voorhies' name.

When the noise had subsided, the latter arose and said that, while he appreciated the honor that Nevada County did him, to accept the position of president of the association would be incompatible with private business.

Judge Davis, of Amador, then took the floor and in an eloquent manner submitted the name of William C. Ralston, Voorhies seconded the nomination and Ralston was elected unanimously.

Ralston was called upon to speak, and with a few remarks said: "I think that an older man should have been chosen for the office. There are many among you better qualified than I to preside over its deliberations, etc.

Fred Zeitler of Nevada was then nominated for vice-president, by Attorney-General Ford, and elected by acclamation. Following his election he made a few humorous remarks, in which he told the convention that unless the miners stood as one they would surely fall. In unison was their strength.

S. J. Hendy and Edward H. Benjamin were then elected treasurer and secretary respectively.

President Neff then made a few remarks, after which three cheers were proposed by Ralston for his predecessor, and when these had been given with a will, on the motion of Judge Sears, Mr. Neff and Julian Sonntag, former secretary, were elected honorary members of the Association.

The Convention then adjourned *sine die*.

The feature of the session, October 24, was a paper presented by A. H. Ricketts on the oil industry, entitled "A New Field for Miners." Mr. Ricketts pointed out the difference in the laws governing mining for fixed minerals and for mineral oils, and advocated needed legislation to fit the case of oil men prospecting on and developing government lands."

The report of the Committee on Resolutions was adopted and provides as follows:

"That the Association will stand by and defend the Caminetti act of 1893; that it cordially indorses the movement for a Federal Department of Mines and Mining, and the proposed Denver Convention to secure the establishment of such a department; and that the Association tenders its assistance and support to the meeting called for November 14, to further the conservation of the flood waters of the state; that the Association asks for the enactment of a law making the theft of gold dust, quartz or amalgam a felony; that it requests Congress to open the Pyramid Lake and Walker Lake Indian Reservations to prospectors; that hereafter at least three papers from experts should be read at each Convention of the Association; that the Committees on Legislation prepare a bill making certain the repeal of the mining act of 1897; that the same Committee report to the next Convention of the Association a bill making

mandatory a record of all mining claims in the state; that work on behalf of the passage of the California Mineral Lands bill be continued in the next Congress; that a uniform system of mining laws for all the country is most desirable; and that:

We favor the preservation and development of our national resources, by the construction of storage reservoirs by the Federal Government for flood protection, and to save for us in aid of navigation and irrigation the flood waters which now run to waste and cause overflow and destruction, as recommended in the report of Colonel Hiram N. Chittenden, and we urge the adoption of the recommendations of this report on the construction of storage reservoirs in the arid regions as a part of the national policy of internal improvements.

This last resolution was the only one of the day that caused any discussion. There are two factions in the state at variance over the water conservation question. One is for state control and the other for Federal.

Assemblyman and former Congressman A. Caminetti presented an encouraging report on the Committee on Debris Dams. It directed attention to the \$500,000 of state and national moneys at hand for the construction of restraining dams and to the work in Congress permitting the use of a state dredger.

An illustrated lecture was given, on the evening of October 25th, at 8 o'clock, under the auspices of the Association by Marsden Mansion, at Golden Gate Hall. The title of the paper was "Restraining Dams and the Protection of Watersheds by the Prevention of Forest Fires."

#### VISIT OF THE A. I. OF M. E. TO LOS ANGELES.

The special train of the American Institute of Mining Engineers from the San Francisco meeting arrived in Los Angeles on the morning of the 11th ult. at River Station, where the whole party, about sixty in number, including ladies, boarded private cars of the electric street railway company. After a visit to the oil well region of the city and inspection of the oil bearing strata under the able direction of Prof. W. L. Watts of the California State Mining Bureau, a trip round the residence section was made to the southwest part of the city and thence to the Chamber of Commerce, where a reception was held and the distinguished visitors were made welcome by the Mayor and officers of the Chamber of Commerce and the reception committee of the Southern California Branch of the California Miners' Association, whose guests they had been in the northern part of the State. Luncheon was given the visitors at the Van Nuys Hotel, but an unexpected shower of rain which was not arranged for as part of the program tended to make the electric car ride to the beach at Santa Monica an excursion which only a few took advantage of, and as the weather cleared, some enjoyed a dip in the Pacific Ocean for the first time. In the evening a theatre party to the Orpheum and supper at Levy's ended the day. On the morning of the 12th a section of the party visited Echo Mountain and Mount Lowe, and as the morning clouds lifted, the beautiful view and equally beautiful sunshine of the Southern California winter day was much admired and enjoyed. The special train having reached Pasadena the whole party proceeded to San Diego via Los Angeles accompanied by several members

of the Southern California Branch of the California Miners' Association. The visit to San Diego and Coronado Beach and a ball in the evening were thoroughly enjoyed after the hot and rather dusty trip to Yosemite. The return journey to the East was begun on the morning of the 13th via Riverside and through the orange groves to Redlands and San Bernardino, from which point the special train left for the Grand Canyon of the Colorado. It is to be regretted that the long distance of the several mining camps of Southern California from the lines of railway prevented the influential and distinguished visitors from visiting the gold mines now in operation and the abandoned condition of the silver mines of Calico district, together with the unique occurrence of borax mining in a rock formation at that place prevented their inspection. The visitors were highly pleased with the mineral and natural advantages of California and expressed great praise of the hospitality tendered to them and intend that the past visit will not be their last.

#### RAILWAY EXTENSION.

As suggested in our last issue, the matter of railway extension in the desert section of Southern California is to be prosecuted during the coming winter. The Randsburg Railway or the line from Kramer on the Santa Fe to Johannesburg is to be extended to Keeler in Inyo county, which is a distance of about 130 miles, through a rich mining territory which in the past twenty years produced many million dollars of silver, when silver mining was possible. Of late years the attention of the prospectors and miners in this section has been devoted to exploration for gold ores, with exceedingly happy results. In the region where silver once was mined, the belt or rocks which experience has found to be gold producers in other regions have been examined, with the result that valuable mines are now being operated for gold. The new desert mining camp at Ballarat, which was once called Soda Spring on the west side of the Panamint Range of mountains is an evidence of the coming prosperity and possibilities of this section. The town has two stores, three saloons, two restaurants, a lodging house, and requires a hotel at present. The elevation is about 1200 feet above sea level and the climate mild. Water is obtained from wells about 16 to 20 feet deep, but a better supply could be obtained from the mountains three or four miles away when the population warrants the expense. Copper ores and galena, as well as other ores and economic minerals requiring shipping facilities have been neglected in the past and it is the intention to put the Borax Works in operation during the coming spring. A party of twelve surveyors has been in the field for some days making a preliminary survey to ascertain the probable cost of the proposed line. A representative of the JOURNAL in an interview with Mr. Woodward of the Randsburg Railway has his authority for the statement that the road will be pushed as soon as a feasible line has been located. The owners of claims in that district will soon be within touch of the base of supplies in Southern California by direct communication and the rich agricultural sections of northern Inyo county will have a market in the mining districts. A new railway line makes traffic for itself by opening new towns in the wilderness, rendering heavy minerals valuable by giving them shipping facilities, and is the chief aid to mining developments.

## EXPERIENCE IN PROSPECTING.

The blind, aimless, unguided search for minerals in any and all classes of rock may be called prospecting by the mining editor who has never prospected intelligently, and who advises that "The prospector should 'cast aside all preconceived idea of how he should find a valuable mineral deposit, and search for mineral as he may find them."

If mineral deposits, or veins bearing mineral in economic quantity were found in any and all classes of rock, irrespective of age, mineral composition or association, the preconceived axiom that blind chance is the best guide to the exploration for minerals would hold good, and all former experience of our own, or of others, might be discarded. As the base of geology is law, or the order of the occurrence of rock masses, formed and sometimes changed under equally well-known causes, the best guide to the discovery of ore in paying quantity, is the environment which experience has taught us is essential to continuance in depth. The following is an illustration of the value of experience founded on geological conditions, in forecasting the probability of the continuance of ore in depth.

A mining engineer (A) examined a deposit of magnetic iron ore on the land of (B), a private owner, who was an attorney-at-law, and who demanded a large amount in cash for it. (C) a firm of iron manufacturers, with whom (A) was employed, were anxious to purchase it at (B) the owner's price, but (A), for geological reasons, condemned the ore body, as being a surface deposit of rich iron ore of small amount, which he classed as the iron capping to a copper vein, and would not yield sufficient ore to pay for the property, and (C) did not purchase it. Another firm bought it sometime afterwards, and soon took out all the iron there was, but not sufficient to pay the price demanded, and on that account condemned the whole country as an iron region, when it was their inexperience or geological knowledge which was at fault. The iron ore was not located in the proper belt, horizon, or zone of rocks to give it permanence in depth, so it is not safe for the tenderfoot to "search for minerals as he may find them."

## SAN GABRIEL WATER.

The miners of San Gabriel Canyon in Los Angeles county, Cal., have been enjoined by the courts from using the water of San Gabriel River for mining purposes, though in some instances it flows through their claims. The electric power company is the opposing influence in this case, although the miners have held the claims and worked them for many years prior to the use of the water for power purposes. It is a matter of history which was recorded in this JOURNAL on 15th January, 1898, that although the northern part of the State has attracted more attention than the southern counties as a gold field, due to the scarcity of water for placer mining, the latter have been at all times gold producers. During the period between 1860 and 1878, one Los Angeles firm had purchased over \$8,000,000 worth of gold dust from the San Gabriel placers. Under the newly-acquired right to the use of the water for power purposes the pre-existing rights of the miners on this stream are now disregarded and one who owns a claim on each bank of the stream cannot wash a pan of dirt with the water which the Federal mining laws give him the title to use. The power company

employees patrol the stream to prevent the miners from using the water as they have been for years accustomed to do. The glaring injustice and outrage on the miners' rights, apparently sanctioned by the law, is a matter which calls for the attention of the California Miners' Association to the case. As the miners, after using the water let it flow into the channel of the stream to be used for irrigation purposes, there has been no conflict in the past or at present in regard to debris brought down the stream. The case is an instance of a powerful and rich corporation usurping the acquired rights of the miners along the stream who have used its waters in peace for years and added substantial wealth to the community for many years prior to the appearance of the electric power company on the scene.

## INTERNATIONAL CLEARING HOUSES.

Nothing has been more effective in promoting the accumulation of wealth in Great Britain than the fact that she has been able to make London the great clearing house of the world, through which international balances of trade are adjusted and paid. This has been the source of immense profit, as it has enabled the Bank of England, and some of the other London banks to regulate the rate of exchange. Sterling exchange rules throughout the world.

Though in trade with Great Britain balances are nearly always on our side of the ledger, still, our exports of gold are principally to London, as we pay through the banks of that city trade balances against us in nearly every nation.

It is rare that we send gold to Paris, almost never to Berlin, and never to St. Petersburg. This is not only the source of great profit to the London banks, but of great inconvenience to us. Bills drawn in our favor in the countries to which we export more than from which we import, and bills drawn by our merchants to pay debts to China, Japan, Brazil, and many other countries, are payable in London.

British foreign trade is nominally nearly double that of the United States. Though in their figures there are duplications which do not exist in this country. To illustrate, the British manufacturer comes over here and buys cotton, transports it home for fabrication, and it is entered of record as an import, then it is manufactured and sent to a foreign market, the fabric being taken up as an export. To the extent of the value or cost of the raw material there is duplication. It is precisely the same in regard to raw materials procured elsewhere. British dealers also buy breadstuffs and provisions abroad, which are also exported. Nothing of the kind occurs in the United States. Great Britain can practice what has been described, because she possesses fully one half the marine tonnage of the world.

In foreign commerce, the United States stands second in the list of nations, and it has acquired sufficient magnitude for our people to begin to think of establishing their own clearing houses, and to provide for supplying their own exchange. Till this is done, it can hardly be said that our system has been placed on the best basis of convenience and profit. We are in a measure doing business at armslength, but in dependence on others.

The United Kingdom being so small in area it is convenient to have the clearing

house in one city, the concentration of that kind of business in one place. It is otherwise in this country. Our domain is continental in width, our frontage is on two oceans, and it would be inconvenient in Asiatic or Oriental trade to have but one clearing house, and that on the Atlantic coast, or the one clearing house on the Pacific. Geographical conditions make two clearing houses a necessity. Besides this, it would be unwise to concentrate the money power too much. The natural selection would be of New York on the Atlantic and San Francisco on the Pacific coast.

It would materially aid our commerce to familiarize foreign peoples with American bills of exchange. As it is, they really know but London. The Pacific coast clearing house would do the business of the western side of the continent, of the eastern sections of Asia and Africa, and of the islands of the Pacific and Indian Oceans.

On the Atlantic side, the clearing house would control the exchanges with Europe, the eastern side of our continent, Western Africa, and the islands in the Gulf of Mexico and Caribbean Sea. The interior of the continent would be accommodated whichever way the foreign trade extended.

To do this work would compel us to supply ourselves amply with whatever should be the measure of value in international dealings. To do this and provide our own merchant marine would immediately place us in the fore front as the commercial nation.

Cling-Surface is a name becoming pretty well known in the manufacturing world, if indications and sales are an indication. The Cling-Surface Manufacturing Company, of 167-172 Virginia street, Buffalo, N. Y., report that they have just established a branch in Johannesburg, South Africa, to meet the increased demand for Cling-Surface in that section, from those who have been compelled to run their belts as tight as possible to prevent slipping. A recent letter from a prominent mechanical engineer says: "Being somewhat skeptical as to the virtue of any belt dressing, it was some time before I concluded to try Cling-Surface, and only after being given to it, as our belts were badly overloaded and showed signs of rapid depreciation. Your Cling-Surface was a complete revelation to me, and belts that formerly had to be run so tight as to cause a great deal of noise are now running slack and quiet, with not the least evidence of slipping. I heartily recommend it for leather belting, for in addition to its increasing the pulling capacity of a belt, I find the belts are soft and show a fine glossy, yet a very clinging surface."

A deposit of marl on the Portage Lake property is said to be able to supply a 2000 bbl. plant.

Naturally, those already in the manufacture of cement are decrying the profits and opportunities this enterprise offers, but promoters trying to get hold of a good cement deal are thick as bees in Michigan. With conservative management no field offers better returns for capital.

Marls are a mixed earthy substance consisting of carbonate of lime, clay and siliceous sand in variable proportions, and are used extensively by the farmers to fertilize their ground. Marls are designated as calcareous clayey or sandy, according to the preponderance of one or the other main ingredients.

## THE USE OF ELECTRICITY IN MINING.

## The Kootenay-Rossland Power Transmission.

BY GEO. P. LOW.

(EDITOR OF THE JOURNAL OF ELECTRICITY.)

[Continued from our issue of September 1st, 1899.]

The next feature of interest in the electrical installation at the War Eagle mine is found in the 300-kilowatt synchronous motor operating the 40-drill compressor illustrated in Figure 28. Three-phase current at 2300 volts is applied to this motor which runs at 200 revolutions per minute. It is of the revolving armature type, has thirty-six poles and, consequently, bears the designation "A P 36-300-200." A General Electric multipolar exciter, not shown in the illustration, is driven from a large pulley on the free end of the motor shaft, and this exciter has an output of nine kilowatts at 125 volts when operated at 1450 revolutions per minute. The compressor which is of double duplex type, is driven through independent ropes applied direct as shown in the illustration.

The method originally installed for starting the synchronous motor is also shown in the illustration given and it consisted of a 30 horse-power induction motor belted to a counter shaft through a friction clutch, this shaft carrying a spur gear by means of which the armature was brought up to speed. It can not be said that this equipment has been satisfactory, although it is in practical operation. The difficulties in its use rest first in the fact that in bringing the armature up to synchronism the compressor must, as well, be brought up to speed; and second, the 30 horse-power motor is too small for the duty required. It takes most exactly eight minutes to bring the motor up to synchronism, in doing which

the 30 horse-power induction motor delivers from 120 to 130 horse-power, and, incidentally, has its temperature raised to a point somewhere above that conducive to a ripe old age. Although the

small motor was still in service at the time of the writer's visit to the mine, it was shortly to be replaced by one having more than double its capacity. It should be stated in justice to the engineer of the Kootenay company that the starting device here discussed was not of his design or sanction. With the exception of the time consumed in starting, the equipment gives the best of satisfaction. A number of small motors ranging up to 20 horse-power in capacity are used in and about the War Eagle mine for ventilating purposes, driving conveyors, etc., and all these motors are of the induction type except that on the compressor.

At the Iron Mast mine is a 75-kilowatt "S. K. C." synchronous motor, made by the Royal Electric Company of Montreal. It is a two-phase motor, with connections altered for three-phase service and is started through an "S. K. C." induction motor and water rheostat, both of which appear in the illustration shown in

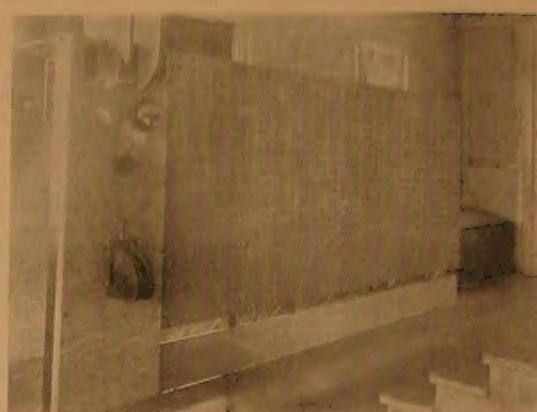


FIGURE 25—FRONT VIEW OF EXTERNAL RESISTANCE BOARD.

General Electric induction motor operating a hoist. The British Columbia Bullion Extraction Company has one 50 horse-power induction motor driving a rock breaker, and one

75-kilowatt synchronous motor operating all machinery about the mine including generators for electrolytic work.

These motors, as well as all others referred to hereafter, are of Canadian General Electric manufacture. In the properties of the British-American Corporation are four 150 horse-power induction motors, each operating a double drum hoist through equipments which are in every way similar to those at the War Eagle mine. All underground work in and about Rossland is operated at 220 volts. Aside from mining work, the principle power installation is that of the general machine shop of Cunliffe & Abblett, where a 50 horse-power induction motor is installed. There are many small motors ranging from one to

five horse-power in size for the furnishing of light power in different industries in Rossland, B. C.

One of the most interesting points to be brought out by the Kootenay Rossland transmission is the demonstration of the fact that the operation of synchronous and induction motors in large units for the driving of hoists and compressors will not necessarily create serious disturbance in the voltage of the distribution circuits, provided high voltage, ample fly-wheel effect and capacity prevails. During daylight the power and lighting circuits are operated in parallel, although they are separated and operated independently from the power house by night.

The War Eagle hoist, however, is operated on an independent circuit by day, but at night it is cut into the power circuit at the Rossland sub-station. The result of this arrangement is shown in the reproduction of the re-

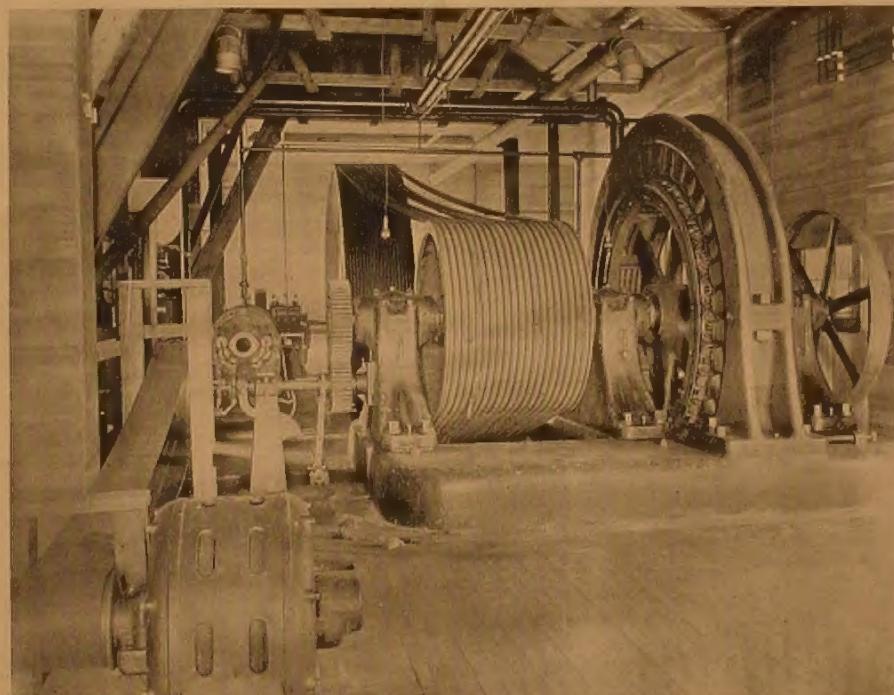


FIGURE 28—VIEW OF 400 H.P. SYNCHRONOUS MOTOR, DRIVING 40-DRILL COMPRESSOR AT WAR EAGLE MINE.

Figure 29. The water rheostat consists of three fan-shaped blades plunged edgewise into a three-compartment tank of water, thus enabling the water resistance cut into each

leg of the three-phase circuit to be varied according to the depth of immersion. The 75-kilowatt motor is belted to a jack-shaft in the manner shown, which drives two double-acting compressors having a combined capacity of ten drills. This is the only Stanley equipment on the West Kootenay circuit and its service is most reliable.

In the Big Three mine is a 75-kilowatt General Electric synchronous motor, driving a seven-drill compressor in the manner in Figure 30, while at the Gertude mine is a 50 horse-power

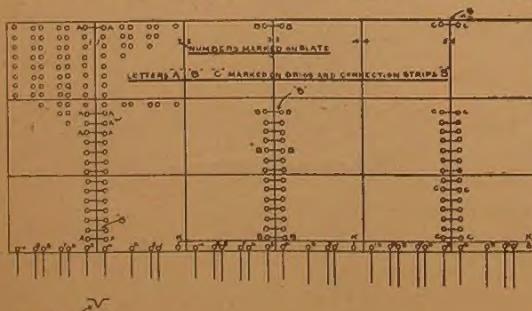


FIG. 27—ASSEMBLY DIAGRAM OF STATIONARY CAST IRON RESISTANCE

cording voltmeter chart shown in Figure 19\* which is that of the lighting circuit. From 6:45 p. m. to 5:00 a. m. the chart shows the regulation of the lighting circuit when on an independent line from the power house. At 5:00 a. m. the War Eagle hoist is taken from the power circuit and put on an independent line to the power house and the remaining power load is coupled in with the lighting load and carried on the second line to the power house. The voltmeter curve, therefore, from 5:00 a. m. to 6:45 p. m. shows the regulation of the plant when all power with the exception of that for the War Eagle hoist is in parallel with the day lighting load. The chart is that for an ordinary day, and, indeed, the charts run so evenly from day to day that each almost duplicates the other. The day in question there were in operation from 5:00 a. m. to 6:45 p. m. three 100 horse-power synchronous motors with an average load of 280 horse-power on compressor work; five 50 horse-power induction motors with an average load of 210 horse-power on the same, 3 of which were on hoists; three 30 horse-power induction motors with an average load of 76 horse-power, and one 40 horse-power induction motor carrying an average load of 32 horse-power. The lighting load consists of 300 horse-power, which is high in proportion to the night lighting load because of the heavy 24-hour load carried. The report from the generating station for the same day shows that the variation reached 108 amperes at 110 volts, or an approximate variation of 205 horse-power, considering which the regulation is remarkably good. The secret of this is stated to

Hosmer, manager of the Canadian Pacific Railway Company's telegraphs, and it was afterwards transferred to the West Kootenay Power and Light Company. Preliminary surveys were made early in 1897, but it was in July of that year that the location of the plant was definitely settled and actual construction

Campbell, to whom great credit is also due for the able administration of the position of electrical engineer which he has filled in addition to his duties as general manager. The line was erected under the supervision of Mr. B. O. Boswell, so well known in California as superintendent of construction of the lines of the Folsom-Sacramento, Fresno, and other transmissions

#### Seven Valuable Metals.

The Southern California Academy of Science will have a series of evenings under the title of "Seven Valuable Metals," and will treat, scientifically, commercially and otherwise, the following: Gold, Silver, Copper, Lead, Zinc, Aluminum and Iron. One metal at a time will receive the attention of the Academy each evening, for seven evenings, beginning the second Tuesday of November and the second Tuesday of each succeeding month.

A. G. Godfrey, the manufacturer of the Mait Dry Gold Saver, who has recently removed from 7th and Broadway to 206 South Los Angeles street, Los Angeles, Cal., reports a great number of machines sold and in use in all parts of the county, and they seem to be giving satisfaction where used. In order to facilitate the work of turning out these gold savers it was found necessary to establish larger and more commodious quarters, which he now has. The standard of the manufacture of the Mait Dry Gold Saver has been kept up, and has made a reputation for the inventor, the manufacturer and the machine.



FIG. 26—BACK VIEW OF EXTERNAL RESISTANCE BOARD



FIG. 29—STANLEY 100 HORSE-POWER SYNCHRONOUS MOTOR, DRIVING TEN-DRILL COMPRESSOR AT THE IRON MASK MINE.

lie in always maintaining a high voltage in relation to the motor ratings, with ample generator and water wheel capacity.

The conception and commencement of the work on the remarkably interesting transmission of the West Kootenay Power and Light Company, Limited, are largely due to the efforts of Sir Charles Ross, Bart., and Mr. Oliver Durant. The charter was obtained in the name of Mr. Patrick A. Largey, president of the Center Star Mining and Smelting Company, Oliver Durant, manager, and C. R.

begun. The plans of the company contemplate the ultimate utilization of the entire three falls.

The present Board of Directors of the West Kootenay company are Sir Charles Ross, Bart., Balnagown, Scotland, President; Mr. W. M. Doull, Montreal, Vice President; Mr. J. M. Smith, Rossland, Secretary and Treasurer; Mr. L. A. Campbell, General Manager, and Messrs. Oliver Durant, Rossland, C. R. Hosmer and Frank Paul, Montreal, and T. G. Blackstock, Rossland. The entire plant is under the personal management of Mr. L. A.



FIG. 30—100 HORSE-POWER SYNCHRONOUS MOTOR, DRIVING SEVEN-DRILL COMPRESSOR AT THE BIG THREE MINE.

The California Bank, L. A., shipped through the Wells Fargo Express Co., to the mint at San Francisco 450 pounds of silver bullion consigned by Wm. T. Smith & Co., the bullion buyers and refiners of 114 N. Main street, Los Angeles Cal. This shipment is from a mine in Mexico and is said to be the result of one clean-up, which was smuggled over the boundary line.

M. C. Bullock Mfg. Co. of Chicago has orders for two hoisting plants and mining machinery to go to Australia.

## CALIFORNIA'S MINERAL PRODUCT AND VALUES FOR TWELVE YEARS

FROM 1887 TO 1898 INCLUSIVE.

DATA COMPILED BY

CHARLES G. YALE

STATISTICIAN OF THE CALIFORNIA STATE FINING BUREAU.

## NOTE ON PLATE AMALGAMATION.\*

BY ALLAN J. CLARK.

In his paper on "The Accumulation of Amalgam on Copper Plates," presented before the Institute three years ago, Mr. R. T. Bayliss records the fact that at the Drummond mill, at Marysville, Montana, a series of tests proved that silver, instead of showing a strong affinity with the amalgamated surface of the copper plates, gave evidence of a persistent tendency to escape amalgamation; the fineness of the amalgam, as measured in gold, being highest nearest to the battery, and giving place to a constantly increasing proportion of silver as the amalgam was deposited upon the copper plates at greater distances from the battery discharge.

On reading this paper during the summer of 1897, it occurred to my mind that the extremely large plate surface presented in the mills of the Homestake Company would offer almost ideal conditions for the observation of this phenomenon. With this object in view, the experiments recorded in Table I. were conducted. All the samples were taken from the Golden Star mill—a full series on the same day. In several cases more than one sample was taken, but the results always coincided very closely with those given in the table. The pulp from the battery was in contact with following amalgamating surfaces:

1. The inside plate of copper.
2. The first row plate of copper, 12 ft. by 4 ft. 6 in. in size.
3. The second row plate of copper, plated with 1 oz. of silver to the square foot, and 12 ft. by 4 ft. 6 in. in size.
4. The third row plate of copper, same as the second row.
5. The fourth row plate of copper, same as the second row.

At the period of the experiments the plates of the last three rows had been in service for about one year.

The results of these experiments apparently confirmed Mr. Bayliss's experience in every detail. At least, that was the writer's conclusion; and he thought no more of the matter until during the first months of 1899 another series of analyses, undertaken with another object in view, brought the subject again to mind.

## TABLE I.—Tests made in 1897.

Sample from	Fineness	Ratio of Gold to Silver
Inside plate.....	818	168
Copper Plate, 1st row.....	812	175
Silvered " 2d " .....	664	231
" 3d " .....	618	376
" 4th " .....	519	407
Copper plate head of 1st row	829	180
" 1st foot " .....	784	185

\*Remarks:—These are somewhat below the average values for 1st row amalgam.

Difference in average gold fineness between 2nd and fourth rows, 141.

During the interval—to be more exact, in July and August, 1898—the plates of the second, third and fourth rows were taken up, thoroughly cleaned and replated at the works with 2 oz. of silver to the square foot. They had, therefore been in use about six months at the period of the new tests, and were in perfect condition. These assays were not made from small samples, but from the entire product of the plates of four batteries during a period of three months, assays being made after each semi-monthly retorting during this period. The results are recorded in Table II. As will be noticed, these figures are an absolute contradiction of those previously obtained.

\*Paper read before the American Institute of Mining Engineers, California Meeting, September, 1899.

## TABLE II.—Tests made in 1899.

Sample from	High Gold	High Silver	Lowest Gold	Lowest Silver	Average Gold	Average Silver	Average Ratio
Silvered plate, 2d row...	972	120	668	408	664	421	1.34
" " 3d " .....	830	131	511	115	532	433	1.29
" " 4th " .....	666	453	542	225	668	433	1.29

Difference in average gold fineness between 2nd and 4th rows, 6.

It is with the hope of eliciting discussion, and perhaps learning of similar experiences, that this note is written. To the writer it would appear that the following is a probable explanation, though he must admit that it is pure theorizing on his part, and that he can bring forward no authorities to support his view. In the first tests the silvered plates, carrying but a light deposit of silver when put down, and having been in service for a considerable time, must have lost a considerable amount of their silver, and must have been approaching the condition of the plain copper plates; while in the second series, the heavier silver deposit and the shorter service make it certain that the silvered surface was intact. It would seem, therefore, that the explanation must rest upon the amalgamated surface—copper in the one case and silver in the other; and that the tendency of the silver in the pulp to resist amalgamation decreases, if it does not entirely disappear, when thoroughly silver-plated surfaces are used in amalgamating.

## CALKINS' CUPEL MACHINES.

These machines have been recently perfected, and are now being placed on the market. Patents having been applied for and claims allowed by the Patent Office, letters patent will shortly be issued.

A Cupel Machine simple in construction, easily operated, and one that will make perfect cupels, is a necessity in every assay office.

To the careful assayer a perfect cupel is as essential to good work as an accurate balance.

It is impossible to make a cupel of uniform density by hand, and the degree of density of the cupel determines its absorptive power.

The different grades of bone ash require different degrees of compression to make a cupel of the same absorptive quality.

This difference in compression is provided for in all of Calkins' Cupel Machines, thus permitting the operator to make his cupels of such density as his bone ash and judgment may demand.

The hand fed table Cupel Machine is of as fine workmanship as the Automatic Machine described in our issue of 15th July, 1899, and uses the same lever and means of compression, and makes as perfect a cupel.

This machine is made for interchangeable molds and dies, in sizes:  $1\frac{1}{4}$  inches,  $1\frac{1}{2}$  inches, and  $1\frac{3}{4}$  inches. In ordering, mention the size or sizes wanted.

Fig. 1 shows the Table pattern Cupel Machine with tray holding the properly moistened bone ash in position for filling the mold.

Fig. 2 shows the Table Cupel Machine after the compression has been made and before the plate forming the bottom of the mold has been slipped away from under the mold or ring in which the cupel is compressed.

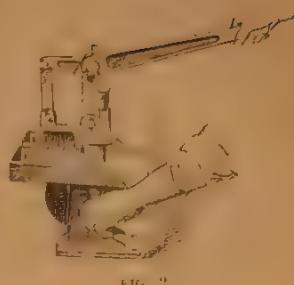


FIG. 2

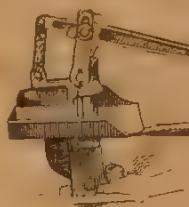


FIG. 3

Figure 3 shows the Table Cupel machine after the plate forming the bottom of the ring or mold in which the cupel is formed has been slipped away from under

the mold, thus permitting the cupel to be expelled through the mold and into the hands of the operator. After having expelled the cupel the plate, or bottom of the mold, is slipped back under the mold, and the bone ash on the tray is pushed into the mold until the mold is even full, when another cupel may be made by going through the operations we have just described.

Another form of the Calkins Machine is the Wall Cupelling Machine hank fed and a very practical and useful machine for the assayer who does not care to use a variety of sizes of cupels, and because of its low price comes within reach of the smallest operator.

It has no interchangeable parts, but is made in three sizes, viz:  $1\frac{1}{4}$  inches;  $1\frac{1}{2}$  inches, and  $1\frac{3}{4}$  inches, each size cupel requiring a separate complete machine. In ordering mention size wanted.

It is made so as to be bolted to the wall, or to a post, and is similar in appearance to and operates the same as the Table Machine.

It is equal in workmanship to either of the other machines and uses the same lever and means of compression and makes as fine a cupel as the Automatic Machine.

Deep or shallow cupels can be made by regulating the quantity of bone ash put into the mold. We recommend the use of deep cupels to insure complete absorption and prevent lead running through and weakening muffle; then after use, such portions of cupel as are clear and unstained should be knocked off and worked over in the next batch of cupels. Write F. W. Braun & Co., Los Angeles, Cal., for further particulars.

The Denver Engineering Works of Denver, Colo., has shipped two carloads of ore cars and electric hoists to Old Mexico and six cars of smelter machinery for Atlanta, Georgia.

Douglas Island Gold Mining Co. recently shipped 80 tons of machinery for their property near the Treadwell mine.

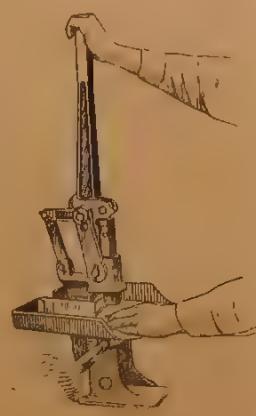
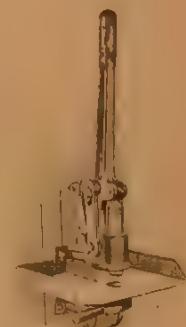


FIG. 1



WALL MACHINE.

## CORRESPONDENCE

### ARIZONA.

From our special correspondent.

CHLORIDE, Ariz., Oct. 11, 1899.

EDITOR JOURNAL.—There have been a number of rich strikes and mining sales in the camp and district within the past few days, not covering more than ten days. The mining sales are of the utmost importance, as well as the new and rich discoveries of good bodies of precious metals. The first sale consummated was that of the Rainbow mine which, in the past, has been one of the best shippers in the district. The mine is situated near the summit of the Cerbat range and is nearer the center of the great ore belt than are the other large mines of the camp. Although the property has shipped a vast amount of good ore, the work for its extraction has not been extensive, a drift in the mountain 150 or more feet deep constituting the amount of work done. A fine body of ore is in sight in the breast of the tunnel for the new owners to begin on, which they have already done, and that with a larger force of men than heretofore engaged at any one time. The purchasing price cannot be very definitely ascertained, as Mr. A. M. MacDussee, the seller, is reticent, at present at least, and cannot be drawn out in answer to the question.

Another sale was that of the Ora Plata, and although the Spanish part of its name would imply silver in its make-up of ores, yet it is strictly a gold mine, and a good one. Like the Rainbow, the price paid is not known, but enough is known to put it at more than \$100,000. The property belonged to J. W. Gerritt of Kingman, who has worked it under the leasing system the past two years with great success, and many of the leasers making fortunes. The mine has not been very extensively supplied with machinery for its proper work and development in the past, but the new owners will establish new steam hoisting works and other plants for systematic and thorough work.

Another sale of equally vast importance to the camp and district was that of the Lone Star mine at Mineral Park by J. P. Finegan. This is one of the many old and partially abandoned mines which are being re-opened and worked. In the early days of the camp the Lone Star produced its tens of thousands of ounces of silver to its owner, but, like so many others, since the decline in the value of silver bullion, the mine has been given up to idleness, and wind and weather has left it in a state bordering on innocuous desuetude, and the new owners will have much dead work to perform before the extremes of the old workings and ore body will be found. New machinery for hoisting has already been ordered and a number of men have been placed at work to do what they can before work can begin regularly. Like the other sales, the purchasing price cannot be learned, but it is conjectured that the price paid was very high, as Mr. Finegan is known to have esteemed the mine very highly, and has refused a number of good offers for a clear title and propositions to work it.

The Tennessee mine, which is now very generally known to be a Los Angeles enterprise through the agency and good management of E. T. Loy, is still a phenomenal producer of lead carbonates rich in the white metal. Additions and improvements in machinery and work have been made until the

shipments of high-grade concentrates are as regular as a clock. So about the development of water to supply the mill in its requirements for continuous operations, the supply has reached a point beyond demand for all purposes and no let ups or stops are made night or day. The mine gives employment directly and indirectly to about seventy-five men, and about forty of this number are kept underground and at the mill. The remainder are kept at top work, which also includes the large number of freight wagons hauling timbers in and concentrates out, and coal, wood and other supplies. There has been an increase of wages for top men from \$2.50 to \$2.75 per day since the 1st inst.

The Merrimac mine is expecting its new concentrating plant daily, and before this reaches the eyes of the readers of the JOURNAL, it will be in transit from the depot a mile away to the mine. A great quantity of ore awaits it on the dump.

## IDAHO.

### Boise Basin.

(From Our Special Correspondent.)

The search for gold is today as exciting as it ever was, as the wild rush of the last few years into Alaska has proven; but those who remember the stampede to Boise Basin in the early '60's, and the marvelous outflow of the yellow metal from that favored region during the following 5 to 10 years, do not hesitate to assert that nothing like it has since occurred, and, further, that the obstacles overcome by the pioneers of that day were equally as severe as those that confronted the Klondiker in 1897.

To understand this, some study of the map is necessary. Boise Basin is a little patch of forest covered upland, situated in the heart of a rugged mountain mass in central Idaho. South of it lies the Snake River desert, 50 to 100 miles wide, waterless, shadeless, and in those days, pathless; a howling waste of snow and sage brush in the winter, fearful stretch of burning sand in the summer. North and east of it lies the Sawtooth range, one of the most rugged and precipitous uplands in the whole west; and contains today areas as big as some eastern counties, almost wholly unexplored. Westward, the unnavigable and also unfordable Snake River, and the Seven Devil Mountains constituted a strong barrier. So it was a region hard to approach, and when found, it bore a most unfriendly crop of Indians.

The ocean was 500 miles away in an air line, and 700 miles by the route traveled; while the nearest navigable streams—the Columbia at Wallula and the Snake at Lewiston were over 200 miles distant.

To understand how the district was discovered and opened up, it is necessary to recall the facts of the first discovery of gold in 1849, which brought thousands from all parts of the world to its shores. In a very short time, (by the spring of 1851) there was a surplus of population, and this surplus began to spread up and down the Pacific Coast in search of new fields. Gradually the prospectors worked northward into South-western Oregon, where famous diggings were found, and from there on to the Columbia, up which the stream of pioneers sought their way to the interior. Here the first notable discovery of gold was at Auburn in North east Oregon. When the crowd in that vicinity became too large, its overplus moved on up the Snake and over into Idaho, when the

next stopping places were at Oro Fino, Pierce City, Florence, Blk City, and Warrens. From these centers the prospectors spread out in all directions, and early in the fall of 1862, a party that had worked its way up the Snake, entered the Basin through its natural inlet—Moore's Creek—and discovered gold. All through the winter of '62-'63, the pioneers poured into the region over the high and snow-clad ranges lying to the north and west of it, each party wishing to be on the ground early in the spring when the snow went off, so as to secure good locations. By the time summer opened, there were 5,000 men at work taking out gold.

The Basin is an irregularly-shaped depression, 15 to 20 miles in extreme diameter, densely timbered, and surrounded on all sides by a rim of taller mountains, except where its principal stream (Moore's Creek) breaks through the southern border and flows to the Boise River. Once in it, you do not easily perceive the reason for calling it a basin, but a trip to the rim anywhere gives sufficient explanation of the title.

From here there has been sent out by the miners fully \$120,000,000 worth of gold to date, four-fifths of which was mined between 1863 and 1870. Some came out by express, some by mail, but the most by freight and private conveyance. Nearly all of the creeks heading on the north and west side of the Basin proved very rich, while those coming in from the east rim had no wealth.

Five towns (Idaho City, Centerville, Pio-neerville, Placerville, and Quartzville) grew, till in 1865 they had a combined population of over 25,000, and then began slowly to decrease, as the more accessible and richer spots in the diggings became exhausted, and the more excitable portion of the citizens drifted away to the newer fields in Montana. By 1880, the population had dwindled to less than 2500, and the annual output of gold to under a quarter of a million, which has been since about the measure of its product.

In the thirty years that have elapsed since its flush days, Boise Basin has passed through the second regulation periods that occur in the life of such localities. For a time, the Chinaman (stepping into the white brother's claim, as the latter stepped out of it and struck the trail for a new excitement) found plenty to clean up, but, finally, the most of them left, and the district fell back almost into a state of nature. Later, when the railroad came within 40 miles, new men began to drift in, and now the Basin is in the throes of a dredge excitement, which promises to give it a new lease of life.

To reach the Basin, one goes to Boise by rail and then takes a stage or private conveyance. At the end of a short day's ride, you are in an attractive upland region. The wagon road, of course, follows up the valley of the main stream, and the first thing that draws attention, after getting into the mining districts, is the extensive bank diggings. For miles these extend on both sides of all the main water courses. Hundreds, yes, thousands of acres are gone, and in the place where they were are piles of boulders or bare bedrock.

Of course, this immense mass of material has been washed into the creeks, and when the latter are examined, their channels are found to be constituted wholly of tailings, which have so filled them up that their beds are now 25 to 50 feet above where they used to be, and their valleys are double or treble their original width. In the towns, the tailing piles encroach on the back yards and

cover the roads, and everywhere force the wretched stream from side to side in the gulches, covering deeper and deeper each year the untouched gravel of the main valleys, where lack of grade saved them from being attacked by the miners of early day.

These, unlovely, tailing-strewed valleys are now the proper and natural field of the dredge, that new mining machine, first put into successful operation by the miner of New Zealand. Two years ago it began to invade the Basin, and now about all the available dredge land, as well as many hundred acres wholly unsuited to that machine, or wholly innocent of any gold value, have been taken up and apportioned to various companies who are striving to build machines that will work successfully. And, as is usually the case, those who are going about the business carefully, and in a business-like way are making a success, while those who are not are making a failure. In the last two years four dredges have been built, only one of which—the New England Company's machine at Idaho City—has been a success. Two more are being built, one of which (at Idaho) will most probably be in profitable operation early in spring.

The experience so far gained is that the elevator dredge, of either the Risdin or Bucyrus type, if properly built and properly modified to suit the conditions existing in the Basin will work successfully. The type that has done so well at Barnack Mountain, with a few alterations, is all right for this region. No trouble has been experienced in clearing bed rock by the machine, and has succeeded in reaching it, for the Basin bed rock is a soft friable granite, which can be dug into with the greatest of ease.

Wood is so abundant and cheap that steam was found far more economical than electricity for power, besides being more easily controlled, and the latter is of great importance in a machine which is called upon suddenly at times to bear up under a very severe strain. A shortage of water exists in certain parts of the district which will be difficult to overcome.

The western and northern rim of the Basin has always been an attractive field for quartz mining. In the early days of the region, the Gold Hill, Iowa, Forest Queen, Mammoth, Elkhorn, Washington and a number of others developed rich surface bonanzas, and were followed down till the ore became base, or water too abundant for comfort. Some of these are being re-opened with success, and others that made no especial stir in the past, but were discovered, like the Lucky Boy, the Summit, and the Golden Fleece, have during the last year been developed into paying properties. The Basin is undeniably a good field for quartz mining. If it were located in Colorado, it would be crowded with prospectors, and in six months or less the scene of a boom.

## MEXICO.

(From our Special Correspondent.)

TEPIC, Mex., Oct. 6, 1899.

EDITOR JOURNAL—Sec. Eleas Galindo has commenced work on the famous Valenciana mine in the Acuitapilco district and will put on some 100 men. This mine was acquired by him some years ago by location. It is an old Spanish mine and the records show that over \$4,000,000 silver has been extracted. He has also commenced work sinking on the Catarina mine which also has been a great producer and is located on the same vein as

the Valenciana mine. New and modern machinery will be placed on the properties at an early date.

La Bagre mine has a large force at work and is paying good dividends to the company.

La Purisima mine in the district of Las Palomas will put on a large force to work sinking and drifting. This is one of the richest gold mines in the district and has produced some \$2,000,000, being worked by the revolutionists as a source of revenue during the early days of the 70's.

The San Bartolo mines have been located by M. B. King, Leo Elias Galindo and others who have refused an offer of \$20,000 gold for these claims. This mine is composed of 20 claims of 100 meters square each and is only ten miles from Tepic. This ore is of a low grade and the vein is from 10 to 20 ft wide. It has been worked as late back as 1759. This mine will be vigorously worked in the near future.

Many copper veins have been discovered in and about Tepic but as yet no locations of this class have been made. Copper ore running from 10 to 35 per cent, with veins from 1 foot to 20 feet wide can be had for only locating them, as no interest is taken here in copper by the natives.

The Mexican Central Railroad will build within two days of Tepic, so the mining industries will receive some help in the way of lesser freight rates.

El Cajon mine near Compustela has a large force to work and is taking out ore which goes 200 oz. silver to the 2000 lbs.

Mr. M. B. King, M. E., has opened a general engineering and assay office in Tepic.

John Dee, a mining expert, is expected here soon to take charge of the mines of C. Barton, near the Port of San Blas.

The Tatepasco mines will be surveyed and reported upon by M. B. King this coming month for San Francisco parties, who will buy the hacienda and mines. The sum stated is nearly half a million dollars gold. This is the property of the late General Romano, Governor of the Territory. TEPIC.

## MICHIGAN.

(From Our Special Correspondent.)

DETROIT, Mich., Oct. 11, '99.

EDITOR JOURNAL—The Boerth Mining Company of Detroit, Michigan, whose mines are at Clarendon, Ontario, have just shipped their first gold brick, valued at \$1700, together with some specimen bricks for the directors. The gold is 848 fine. At the Detroit office the president says the second brick will be shipped tonight, and at the mine it is reported that this brick will be double the amount of that sent last week. As the mill is new the full returns are not expected for some time. The sulphurets are not being utilized, but are being saved for treatment later. The ore is assaying \$18 per ton, and the mine, at the present depth, is looking well, with every indication of continuing so.

It will be remembered that some time ago this company erected an Eames' Process Mill, which proved a perfect failure, the machinery going to pieces after a ton or two had been worked. A straight 10-stamp mill was built, but was badly located with insufficient water. However, these drawbacks have been overcome, and it now looks as though this mine is entering the lists of steady producers. This is a fine property for the development done.

This company's stock is being bought up now, 10,000 shares of the treasury stock be-

ing taken yesterday, and they will soon have ample funds for development. This is the first Detroit company out of all the companies started during the recent renaissance in mining in this city to show its product.

The stock is being placed at 50 cents per share.

## NEVADA.

(From Our Special Correspondent.)

SEARCHLIGHT, LINCOLN COUNTY, NEVADA, October 15, 1899.

Searchlight is situated in the southern part of Nevada, 12 miles west from the Colorado River, 8 miles east from the California line, 25 miles east from Mauvel, the terminus of the California Eastern Railway, which is the shipping point from the camp.

Searchlight, the mine the camp took its name from, was the first property to be opened up with any amount of work. This property shipped ore during the year of 1898 to pay for its own developing of 150 feet, and open up eight other claims. Today the Searchlight has 1000 feet of work and several thousand dollars in ore blocked out and on the dump. This property has always paid from the top. The ore is mostly free milling, and is now working a small force of men. This property is owned by the Searchlight Mining and Milling Company, G. M. Rose, general manager.

The New New Year's Gift Mine parallels the Searchlight on the north. This property at the present time is closed down: The ledge is from 6 to 8 feet in width, well defined. In value it assays from \$14 to \$20 per ton in gold, 2 to 5 oz. silver. There is 500 feet of development work. It is owned by the Searchlight Company, and under the same management.

The Good Hope mine is situated quarter of a mile south from the Searchlight. It has a shaft 135 feet down on the ledge. The ore from this property is very high grade, some of it running up in the hundreds of dollars per ton. It is not uncommon to see the free gold in the quartz. This property at the present is also closed down, but I am told will start up soon intending to ship the ore. It is owned by G. F. Colton.

The Rike mine is an extension on the east of the Good Hope, has over 100 feet of development work, and is showing up very good. The ore in this property increases in value in depth. There are two men working on contract. It will without a doubt be a producer in the near future. This property is owned by F. C. Perew.

Golden Treasure mine and the Copper King (an extension) parallel the Rike and Good Hope on the south. On the Golden Treasure, is very nearly 1,000 feet of development work done, with a large body of good ore. The future for this property is very bright. It is owned by the Hopkins Mining and Milling Company, B. M. Macready, mgr.

There are several other prospects in the camp that are showing fine. Most of the ores are free, and with a way to treat the ore without shipping and paying the high rate on railway and wagon haul, this camp would move to the front, as the outlook could not be better, with its thousands of tons of ore, which will assay from \$8 to \$20 per ton, ores that cannot be shipped out.

G. F. Colton is district recorder; B. M. Macready is justice of the peace. There is a school, two stores, and a stage three times a week.

## Miscellaneous Mining News.

## ALASKA.

Another story of great gold discoveries in the north has been brought down by Col. Frank Haight, a well known Salt Lake mining man, who has mining interests in Alaska. Col. Haight was one of the few passengers who came down on the *Alliance* who had come directly from *Anvil City*. He says that a short while before he left the new mining camp, some prospectors came in with the report of a great strike at *Cape Prince of Wales*, which is 100 miles north of *Cape Nome*.

The Alaska Gold Mining Company of Indiana has within the last day or two met with an exceptional run of good fortune. At a depth of 700 feet vertical, and 900 feet in the tunnel, a quartz ledge has been struck which is undoubtedly one of the richest ever opened in Alaska. It is over six feet wide, and an average assay showed \$104.74 per ton. The parties representing this mine in *Juneau* are Colonel Darrow and H. R. Snyder. They were naturally greatly elated.

## ARIZONA.

A deed was filed in the Pima County recorder's office, by which George H. Sisson and wife sold thirty-five copper claims in the *Silver Bell* district to the *Oxide Copper Company*, a corporation recently incorporated under the laws of New Jersey. The instrument bore on its face five revenue stamps costing \$5,000, the purchase price as stated in the deed being \$5,000,000. Prior to the filing of the deed, amended location notices of the thirty-five claims were filed with the recorder. These claims all show good copper-bearing ore, and now the deal has been consummated, it is expected that the *Silver Bell* district will be the scene of great activity in the near future.

## CALIFORNIA.

## AMADOR COUNTY.

S. K. Thornton of the *Shenandoah Gold Mining and Milling Company*, at *Plymouth*, has a force of men at work developing the property of the above company, which is what is generally known throughout the northern part of the county as the *Easton* mine. The shaft is down 250 feet, and the ore body fills the shaft at the bottom. Sinking is still being prosecuted, while drifting in the ore body is being pushed forward at the 200-foot level.

A force of men is engaged on the *Grover* mine, near *Drytown*, pulling down the old buildings and getting ready to reopen the shaft, as soon as the management of the *Consolidated Gover, North Gover, Fremont and Loyal Lead* mines is ready to enter upon that work. Arrangements have already been made to commence the sinking of a three-compartment shaft on the *Fremont*, and, in a short time, the sinking of a shaft on the *Loyal Lead* and *North Gover* will be inaugurated. C. E. Purington has charge of the work.—*Amador Ledger*.

## CALAVERAS COUNTY.

The *Utica Company's* power line is now completed from the power-house above *Murphy* to *Angel's Camp*, and the different mines of the company throughout the town have been connected with the main line. The work was done with care and accuracy and

in a substantial manner. The poles are of the choicest redwood, 14x14 inches at the base and 8x8 inches at the top, set 5 feet in the ground, and an average of twenty-five feet above ground. No. 12 copper wires, three wires on each pole, form the main combination. The insulators are of glass and firmly secured to the cross bars. The poles are set on an average of 150 feet apart. There is no better constructed power line in the country than this.

Everything in the power house is now in readiness to develop power, and as soon as the needed repairs on the company's water ditch are made, and the first rains begin to descend, the dynamos will be put in operation, and the long-looked for power will be flashed through the wires to the places of use. Mr. Gurney and his competent crew are deserving of much credit for the good service they have rendered the company in the construction of the plant and lines.

## EL DORADO COUNTY.

Contracts have been let for a new stamp mill, together with four *Huntingtons*, for the *Blue Gouge* mine, at *Placerville*. The capacity of the entire plant will be forty stamps. A force of men is at work preparing for the reception of machinery, which, under contract, must be delivered by the first November. It is calculated to have the mill running by the 1st of December.

## PLACER COUNTY.

I. Meyer has sold his interest in the copper mine at *Whisky Hill*. The ore carried from \$3.76 to \$6 in gold, and \$25 per ton in copper. Mr. Meyer has formed a company for working tailings in *Auburn Ravine* by the hydraulic process. The company has bought the *Wall* and *Sickles* farms, and is negotiating for the *Symmes* farm at *Gold Hill*. Work will be begun at the upper end of the *Flagg* farm. The water will be taken from *Chile Hill*. Eleven thousand feet of iron pipe will be required.

## RIVERSIDE COUNTY.

A new mining camp, known as *San Vicente* camp, has been established twelve miles east of *Capistrano*, San Diego county. It is on the *Riverside* county side of the line, in the angle where that county joins *Orange* and *San Diego* counties. The original location was made by R. E. Doan, Ben Barney and James Dumphy, all of *Los Angeles*. A tunnel is being run to tap the main vein. The value of the property is mainly in the high percentage of tin the ore carries. Some assays made of samples of the ore indicate that it is likely to prove of the greatest value as a tin mine.

## SAN BERNARDINO COUNTY.

W. E. Robinson began suit against the *Ivanpah Smelting Company* to recover on services rendered the corporation as its vice president and general manager for the period beginning July 18, 1898, to May 3, 1899. Robinson alleges that on April 29, 1898, the company expressly agreed to pay him a salary of \$6,000 a year, and that he has never received anything in the contract except \$400. He asks judgment for \$5,600.

Robinson is also suing J. D. Hanbury, president of the *Ivanpah Smelting Company*, for damages in the sum of \$1000. Robinson claims to be owner of 720 shares of the corporation's stock, and alleges that on September 16, 1899, he made a demand in writing upon Hanbury for permission to visit, accompanied by his expert, and examine the Cop-

per World mine, situated in San Bernardino county, and all other mines owned by the company. But Hanbury is alleged to have refused Robinson's request, whereupon the latter prays a judgment for \$1000.

The *Ivanpah Smelting Company's* Copper World mine is located in the Mojave Desert, some thirty miles from *Mauvel*, in the direction of *Death Valley*. It is said to be one of the four largest copper mines in the United States, which means the world, and within a very short time has been developed from a property worth from \$20,000 to \$50,000 to one greatly overlapping a million dollars' valuation. Its present working force makes possible an output of three or four carloads a month, a carload of copper being worth about \$7,000. The ore is first smelted at the mine, then shipped to *New York*, where it is refined. The amount of ore already in sight is estimated to be worth \$1,400,000, and there are supposed to be millions not uncovered.

The majority of the stock of the smelting company—58 per cent of the original issue—is now in litigation in Judge Shaw's court. Robinson alleges that it was owned by the copartnership of *Robinson & Hanbury*, although all the stock owned by the firm is on its books in Hanbury's name. Robinson averring that Hanbury has ever refused to transfer to him his undivided one-half interest in the firm's partial ownership of the company's mines. Robinson therefore asks to be restored to possession of 29 per cent of the smelting company's original issue of stock par valued at \$250,000.

## SAN DIEGO COUNTY.

Within thirty days the vast deposits of kaolin, situated on *El Cajon Mountain*, 20 miles east of this city, will be giving up their substance to commerce, and the high-class pottery clay will be on the way to Japanese factories to be manufactured into fine crockery, says the *San Diego Union*.

These deposits of kaolin, discovered only a few months ago by Charles E. Stream, while he was prospecting for gold ore, are said by competent authority to be the best and most valuable kaolin beds in the United States. No kaolin found elsewhere in the world is considered better, but the best found in France, and on an island in the Baltic Sea is about the same in quality as the San Diego product. Stream sold the deposits a few days ago to *Earl & Morgan*, and *Fuller & Riall* of this city, and *Holcomb & McCarroll*, of *Yuma* (Ariz.). The kaolin owned by these parties is embraced in 16 claims, and other claims are owned by individuals in the immediate vicinity.

Some months ago, Mr. Morgan, of *Earl & Morgan*, took samples of the kaolin to Japan, where he allowed the pottery manufacturers to make a test of it. It turned out so satisfactory that the Japanese, whose source of supply in China and Japan is nearly exhausted, were delighted at the prospect of securing a new supply, and Mr. Morgan was asked to quote prices on 1,000 tons a month delivered in Japan. Mr. Morgan had not the kaolin to deliver at that time, but he cabled to his friend, *George Holcomb* of *Yuma*, to buy the kaolin deposits. This was done by Mr. Holcomb and his associates mentioned above. The price paid has been kept a secret, but it is a small fortune at least.

Some reports have been circulated concerning a cyanide plant, of 600 tons daily capacity, to be placed upon the properties of the *Golden Cross Mining and Milling Company* at

Hedges. Mr. C. W. Paul, the general manager and former receiver, has asked for bids upon the plant, but as to what tests have been made to show that the tailings are workable by the cyanide process it has not been stated. There are about 700,000 tons of tailings on the dump, valued at about \$4 per ton, which makes a total of \$2,800,000. How much it will cost per ton to work the material is a matter of speculation, as the plant will of necessity be placed some distance up the hill from the mill, in order to get rid of the pulp after cyaniding, and the tailings from the mill must be trammed to the plant.

Fred Blether, who lives in the Grapevine mining district, reports activity in prospecting and mining development in that region. The Farnsworth Company, recently organized, will do extensive development work on the Dewey group of mines. Mr. Blethen is negotiating with parties for a stamp mill to be put up on his property.

#### SHASTA COUNTY.

A recent strike in the Gold King mine, on Mule Mountain, Shasta County, has disclosed a rich ledge of gold quartz that is rich enough to give Superintendent A. G. Boggs hope that it will develop into a pay mine. The ledge was cut by a crosscut tunnel sixty feet wide. Assays have not yet been made, so that the value of the strike cannot be stated.

#### COLORADO.

##### Cripple Creek Notes.

The Jerry Johnson is now in ore in three shafts. On No. 2, the mineral has been entered and shows values of six ounces. On No. 3, Judge Porter and associates have five feet of mineral from which assays showing from five to seven ounces have been had. All the shafts are equipped with machinery, and a big product will be made.

Lessee Blickenstaff & Co., operating the Lucky Gus, have made a good strike in the bottom level of that property. Drifts are being run in two directions, and in the north drift was entered twenty inches of mineral good for \$100 to the ton. The lessees now have ore in both breasts and shipments will be resumed.

Mayer and Pierce, operating the Electric, on Gold Hill, have cut the basalt dyke with the expectation of finding a good chute. The property is owned by the Cadillac Co.

Lessee Murphy, operating the Pharmacist, has made a rich strike in the upper workings. Particulars regarding the extent of it are lacking, yet it is known definitely to carry a streak of rich water quartz, showing plenty of free gold. The vein is said to be a new one for the mine.

Another rich strike has been made on Haven Hill, and from present indications a new chute in the Doctor vein has been found. The scene of the find is the Morning Star claim of the Enterprise Company. At a depth of only 40 feet the lessees, John L. Reardon and Oscar Simms, have two feet of pay ore carrying sylvanite and free gold, assays from which have been had showing as high as 74 ounces to the ton. The bulk of the mineral is conservatively estimated to be worth from three to four ounces to the ton; the ore body has indications of permanency.

J. R. McKinie and a number of those interested with him in the Banner Gold Mining Company have purchased the Texas group of claims on Beacon Hill. The purchase price was \$20,000. The Texas group adjoins the

property of the Banner Gold Mining Company and includes the Mustang, Bronco, Texas Girl and Gold Eagle claims, comprising 25 acres of patented territory. The gentlemen who have bought these claims will form a company for the purpose of developing them. The new company will be organized in a few days with a capitalization of 1,500,000 shares of the par value of \$1 per share. The treasury reserve will consist of 200,000 shares of stock and \$5,000 in cash.—*Colorado Springs Investor.*

#### IDAHO.

One of the most valuable strikes which has been made during the history of mining on the South Fork was that in the Midnight a few days ago, that on the "16 to 1" last winter being the only one for years that surpasses it. The No. 5 tunnel of the Morning mine while crossing the Midnight to connect with the You Like cut a ledge there which carries over two feet of the purest shipping ore, besides a lot of milling ore. Where the vein is cut is nearly 600 feet below the lowest workings of the Morning or the You Like, and must be considerably deeper than that below the surface of the Midnight.

The property is owned by E. J. Clark and one or two others, who had been trying to bond it to the Morning Company just prior to the strike, but the company had no use for it except as a route for a tunnel and therefore did not care to bond.—*Wallace Press.*

#### MICHIGAN.

Marls in Michigan are attracting much attention and several companies for the manufacture of Portland cement are being started. There are some fine marl beds in Michigan awaiting capital for development. Wm. M. Courtis of Detroit, Chemist and Mining Engineer, has just examined the Grayling property, and reports it as one of the purest marls analyzed by him.

This deposit is capable of supplying a 1000 bbl. per day plant for 13 years. The profit made on cement is large, and estimating the cost of plant and purchase of property at \$500,000, this deposit would yield a profit of \$245,000 per year at the present price of cement, or estimating the profit at 40 cts. per bbl., \$108,000 per year, the selling price being \$1.70 per bbl., with a profit, in well-managed works, of 90 cts.

As it would take seven such factories as the above to keep up with the increased demand of '98 over '97 and seven more to meet the importation of Portland cement, there is a large field for capital.

New stockpile ground is being cleared for the product of No. 3 shaft at the Pabst. The new ground is well back on the foot wall.

The Norrie stockpiles, with the exception of those at No. 5 and No. 2 shafts, have been practically all shipped. A steam shovel will be put at work at No. 5 pile next week. There is quite a large amount of ore in stockpiles at the three shafts at the East Norrie, but the steam shovel loading there will soon clean it up.

The Alpha, which adjoins the Brotherton on the west, has shipped about 4,000 tons this season to the furnaces at Ashland and Marquette. The shaft on the property, which is 285 feet deep, will be sunk another hundred feet during the winter, and if conditions at that depth are as encouraging as anticipated, another shaft will be put down.

The water in the Ashland mine has been lowered to a point below the ninth level. The big openings of the mine, located on the eighth and ninth levels, held the great bulk of the water, and now that the ninth level has been pumped out, rapid progress will be made in lowering it to the bottom of the mine, it looks as though the water will be all out by Nov. 1st or very soon thereafter.

#### MISSOURI.

##### Joplin Ore Market.

There was very little change from last week. Some fancy ore brought \$43.50 per ton, an advance of 50c., and lower grade zinc ores advanced slightly, but lead remained unchanged, selling as for weeks past at \$27 per 1,000 pounds. The shut-down is general, fully 80 per cent of the mills being idle, and operators are making repairs and doing dead work. The surplus ore is about all cleaned up, and in a few days there will probably not be a pound of ore unsold in the district.

During the corresponding week last year top grade zinc ore sold at \$33.50 per ton, and lead at \$22.50 per thousand. The output was greater than that of last week by 1,526,180 lbs. of zinc and 227,160 lbs. of lead, but the value was less by \$5,761. For the corresponding 40 weeks of last year the lead output was greater by 4,920,912 lbs., but the zinc sales were less by 62,063,290 lbs., and the value was less by \$3,760,178. As compared with the preceding week the sales show a falling off to the extent of 1,630 lbs. of zinc and 416,610 lbs. of lead, and the value was less by \$41,806. Following is the turn-in by camps:

	Lbs. Zinc.	Lbs. Lead.	Value.
Joplin.....	1,574,510	157,550	\$37,319
Belleville.....	271,770	9,030	6,097
Galena-Empire.....	1,759,950	219,820	35,614
Webb City .....	207,190	9,930	4,204
Stotts City.....	282,820	.....	5,656
Alba .....	87,620	.....	1,840
Duenweg .....	110,650	41,520	3,114
Hells Neck.....	72,200	23,790	2,158
Carterville.....	880,410	159,130	22,404
Cave Springs.....	138,230	24,000	3,136
Central City.....	401,750	34,180	8,145
South Jackson...	80,200	22,510	1,292
Aurora.....	1,125,000	.....	16,448
Dade County.....	210,000	.....	2,150
Barry County....	78,480	.....	1,256
Morgan County..	41,970	61,330	2,108
Oronogo.....	396,620	.....	7,078
Carthage.....	36,480	.....	693
Granby .....	244,300	12,000	3,554
Lehigh .....	44,170	.....	928
Total for week..	8,044,020	774,970	\$165,184
Total 40 weeks..	400,358,950	37,171,098	\$8,786,446

#### MINNESOTA.

Duluth iron ore transportation men have just received complete returns on the movement of iron to Oct. 1 from the Lake Superior region. The total movement foots up 13,016,237 gross tons, which is an increase of 5,019,045 tons over the shipments of last year to the same date. If the advantage is maintained, and if the close of this season of navigation is not uncommonly early it is expected that the shipments will be slightly in excess of 16,000,000 tons.

There seems to be only one condition that may make the movement of ore for the balance of the season disappointing in volume, and that is a shortage of ore. The big mines, such as the Chapin, Fayal and Adams, have almost or have in some cases, entirely ex-

hausted their stockpiles and shipping from such properties will be necessarily more restricted for the present month and in November. It is considered that under all the circumstances of this season of navigation the shipping of 13,000,000 gross tons of iron ore between May 1 and Oct. 1 is a great record.

The iron ore shippers, who dropped out of the market for the vessel tonnage about ten days ago, are in the market again. The rate is said to still be \$1.75 and the grain rate is variously quoted at from 4½ to 5 cents.—*Duluth News Tribune.*

## SOUTH DAKOTA.

### Purchase of the Kicking Horse.

A mining deal involving \$65,000 was closed last week. The sale of the Kicking Horse group to D. C. Boley, D. W. Campbell and associates means a great deal to the Blacktail district, and the price paid shows that practical mining men realize the merits of property in that locality.

Several months ago Mr. Boley obtained a bond upon this property from Geo. M. Johnson, Matt Johnson and Christian Godfrey, and since then has pumped the water out of the mine, made a very thorough examination of the property, and the result is the closing of a deal which will undoubtedly give that section of the country a reduction plant, as it is understood that Mr. Boley is contemplating the erection of a plant of his own to treat the ore from this and other Blacktail property in which he is interested.—*Black Hills Mining Review.*

The management of the cyanide plant on Calamity Gulch, Black Hills, reports the works to be in constant operation on ore from the Metallic streak and adjoining properties. The clean-ups show the plants to be capable of attracting about 90 per cent of the value of the ore, and that without crushing to the usual fineness. The plant has a capacity of 25 tons per day by running two shifts, but they are now working one shift and treating 15 tons a day.

F. H. Long and associates have given a contract to James Hartgering for putting up a large mill at Mystica in the Black Hills country. The mill will be 40x80 on the ground, and will be four stories high. The electro-cyanide process is to be employed, and great results are to be expected of it.

## WASHINGTON.

The Republic property is expected to cut the ledge at about 600 feet. The ore in the vein being run to connect tunnels three and four, assays from \$150 to \$1000, and is expected to mill \$200. If rich values are found at the 600-foot level the permanency of the mines in the camp will be well established. News received by Thomas & Newcomb at Spokane last week is that the lower tunnel has reached the ledge and is 27 feet wide, assaying \$30 per ton in gold across the ledge.

At the upper end of the Republic camp lies the Mt. Lion, and within a month they expect to open their mine to a depth of 520 feet. Between these big producing mines Republic and Mt. Lion are to be found many others following closely in their footsteps in the way of opening up large deposits of shipping ore. An 800-ton ore bin is under construction. The 125 horse power engine that will drive the generator is on the ground. There is ready for stoping 280 feet in the south drift.

## FOREIGN MINING NEWS

### BRITISH COLUMBIA.

Rossland ore shipments for the year were 129,039 tons.

The B. A. C. Company are expecting to commence shipping shortly from the Josie and Number One. They have recently erected an 1800-foot tramway to facilitate the hauling of ore.

The I. X. L. mine is shipping its ore direct to Northport, where it receives a smelter rate of \$4.50. They have applied for a 700-foot spur to connect the mine with the Great Northern Railroad. The company reports \$20,000 in the treasury. Number one tunnel is in 150 feet; number two tunnel, 240 feet, and number three, 300 feet; a crosscut is being run in number three tunnel to strike the vein about the face of number two tunnel and is expected to strike the ledge in about thirty days.

The Winnipeg, located in Boundary mining district, has 10,000 tons of ore ready for shipment which will probably net \$15 to the ton. They have reached a depth of 300 feet in their workings and have from two to seven feet of solid pyrrhotite in the drifts. The railroad recently when grading through this property opened up a ledge, running through it a distance of 30 feet. Assays from the surface gave \$80 per ton in gold, silver and copper. Shipments to smelter will commence as soon as track is ready, which will be inside of a month.

## LOWER CALIFORNIA.

Thomas Kneale, interested with J. M. Albright in working over the tailings of the Princess gold mine at Alamo, returned to Lower California last week to resume work. He gives a glowing account of the mining business in and around Alamo, the camp being in a more prosperous condition than at any time since the Princess and Aurora were turning out bullion, and the little town was full of miners nine or ten years ago. Kneale and Albright have a good enough thing of it in the Princess tailings, and are making money by means of their cyaniding plant. Perhaps the best looking of the quartz mines in the camp at present is the San David, formerly owned by the Princess Mining Company, but which was never systematically developed until taken in charge some months ago by the Sterling Mining Company of Pittsburgh, Pa., a concern that is fortunate in having a manager on the ground that, according to a report, knows how to make a good mine produce bullion. He is George P. Brown, one of the most wide awake men in the Alamo section. He has been in San Diego and Los Angeles the past few days, having brought up a bar of gold from the San David mill, which is kept going almost constantly.

The Texas mill and mine, owned by a company in which Senator Cockrell of Missouri is interested is kept busy. The property looks well and is every day becoming more valuable. The old Aurora, the first and only real bonanza mine in the camp, though for some time it has not been giving bonanza returns, is again in good ore. A fine body of ore has also been encountered in the Montezuma mine, and the Grande mine, owned by Joe Playter, is keeping up with the procession

There are many other good prospects in the Alamo section, and the owners are looking forward to a lively and prosperous winter. The placering is productive of good results, though the greater part of the work in the ditches is done by Chinamen. There are at least 600 men in the camp at present.

## MEXICO.

President Diaz, in his annual message to the congress of Mexico, says with reference to mining interests: "The progress of mining may be appreciated by the number of new mining properties that have been acquired under the law on the subject. From July, 1892, up to the present date 10,099 titles, covering 86,426 pertencias of the hectare have been issued. The constant increase in the exportation of metals and ores of all kinds also affords the measure of the increase. In the output during the last fiscal year the exportation of mineral products, metallic and non-metallic, was valued at \$95,273,000, showing an increase of \$3,835,000 over the exportation of the previous year."

## PERSONAL NEWS ITEMS

J. H. TINBOOTS, mining engineer from California, is now on a tour through Arizona, examining properties for a development syndicate, under contract with B. C. Flower & Co., bankers of New York.

The United States Potash Company, with which W. M. COURTS, A. M., is connected, are placing their stock this month. An article in the *Engineering and Mining Journal* of Sept. 23rd shows the great advantage of this enterprise.

It must be getting cool in Oregon, as we see that the *Oregon Mining Journal* will receive wood on subscriptions. Better come to California.

LEW E. AUBURY, mining engineer of Los Angeles, who is supervising the development of a number of mines at Chloride, Arizona, paid a visit to that section last week.

PROF. W. S. KEYES recently left Salt Lake City, Utah, for San Francisco, Cal.

D. W. CAMPBELL, who is concerned in the Kicking Horse deal, left for his home at Chicago, Illinois, after spending several days in the vicinity of Deadwood, S. Dak.

A. D. DEMASTERS, formerly superintendent of the Lucky Gus mine, at Cripple Creek, Colo., arrived in Deadwood, S. Dak., last week, and will spend some time in looking over the resources of the district.

A. W. SILSBY, who has had charge of the rock work on the new ditch for the Old Channel mine, on Six Mile Creek, near Grants Pass, Ore., has completed his contract.

MAJOR LECKIE, consulting mining engineer of the Republic mine, Republic, Wash., has been on a visit to Rossland, B. C. Major Leckie has been consulting with Mr. JACKLING, of the Mercur mine, to increase the mill capacity of the Republic.

HENRY MATHEY of New York City, metallurgist of the Preston Peak Copper Company, arrived in Grant's Pass, Ore., a few days since.

ROBERT RUOFF, of London, England, assistant mechanical engineer of the Simmer & Jack mine of the Consolidated Gold Field Company, South Africa, has been looking over the surface plant of some of the great Lake Superior copper mines.

A. F. NELSON, superintendent of the Eureka mine, on Soldier Creek, Ore., left for the mine last week.

ARTHUR L. COLLINS, consulting engineer of the Smuggler-Union mine at Telluride, Colo., has been appointed general manager of the property, to succeed CHAS. W. MILLER, resigned. BENJAMIN B. LAWRENCE, president of the company, and BULKLEY WELLS, secretary and treasurer, recently spent several days looking over the property.

REGINALD N. TRUMAN, late with the Mountain Copper Company of Shasta county, Cal., has been appointed general manager of the Ray Copper mines, Limited, of Riverside, Pinal county, Ariz.

# The Mining And Metallurgical Journal

## THE MARKETS.

All quotations, financial reports and other statistical figures given under this head are New York Quotations, unless otherwise stated in each item. These figures are carefully revised each issue, and constitute a very accurate compilation of statistical matter.

### METALS.

NEW YORK, Oct. 14th, 1899.

The following are the Silver, Copper and Lead quotations for the last two weeks:

	SILVER.	COPPER.	LEAD
Oct. 16	\$19.6	18.50	4.60
" 17	19.6	18.50	4.60
" 18	19	18.50	4.60
" 19	19	18.25	4.60
" 20	19	18.25	4.60
" 21	19	18.25	4.60
" 22	17.75	18.25	4.60
" 23	17.75	18.25	4.60
" 24	17.75	18.25	4.60
" 25	17.75	18.25	4.60
" 26	17.75	18.25	4.60
" 27	17.75	18.00	4.675
" 28	17.75	18.00	4.675
" 29	17.75	18.00	4.60
" 30	17.75	18.00	4.60

### SILVER

The Silver market has been steady and dull showing only small fractional changes during the week and closing at 26 $\frac{1}{4}$  d. in London.

### COPPER.

Prices remain unchanged from those quoted last week. Lake copper 18 $\frac{1}{2}$  c. Electrolytic in cakes, wirebars and Ingots 17 @ 17 $\frac{1}{2}$  c. Cathode 16 $\frac{1}{2}$  @ 16 $\frac{1}{2}$  c. casting copper 17c nominal. The foreign market is still dominated by difficulties betw. England and Transvaal. London

is quoted, English tough £78, 15s @ £79 5s, beat selected £80 5s @ £80 15s. India sheets £83@£83 10s.

### LEAD.

Lead continues in good demand and with no change in prices. New York being quoted at 4.55@4.60c.

The foreign market has been irregular but the tendency is upwards. Spot is quoted at £15 17s 6d @ £16 2s 6d for Spanish, and £16 5s @ £16 7s 6d for English, while futures are at a discount of 5s to 10s.

### SPLINTER

The disquieting news from the ore-fields stirred up consumers and a good business has resulted at stiffening prices. New York is quoted at 5.45@5.50c.

The foreign market is also firmer and again higher good ordinarie being quoted at £22 12 6d. Specials £22 17s 6d.

### ANTIMONY.

Antimony is in good demand. We quote Cooksons at 10 $\frac{1}{2}$  @ 11c. Hallett's at 9 1/4@9 1/2c. U. S. Star and Hungarian 71 1/2@75c.

### NICKEL.

Nickel continues unchanged and no alteration of prices can be reported. We quote for ton lots 33@36c per lb., and for smaller orders 35 1/2@38c. London prices are 14@16d. per lb., according to size of order.

### TIN

It is quite natural that this article, which is always volatile should suffer in consequence of the unsettled state of affairs abroad and the higher money market. Fluctuations have been rather wide but the close is again firm at £1.45 15s for spot and £1.46 2s 6d for three months.

In New York the buying was restricted

to quantities needed to cover immediate requirements although consumption continues at a fair rate. We quote Straits in carload lots at 32 1/2c f. o. b. New York.

### PLATINUM.

The demand for Platinum is good and prices are firmer. New York is quoted \$17.75 per ounce for large lots and \$18 for smaller orders.

### POTASSIUM CYANIDE.

Purified, 98@99 per cent., in cases of 120 lb. at 30c. per lb., in 5, 10, 25 and 50 lb. tins at an advance.

### QUICKSILVER.

The wholesale price in New York has advanced \$1 and is now \$48.00 per flask. The London price has risen to £8 17s 6d per flask, with the same rate from second hands.

### THE MINOR METALS.

Quotations are given below for New York delivery:

Aluminum.	
No. 1, 99 per cent. ingots, per lb.	15@17c
Aluminum sheets per lb. ....	17@20c
Alumin. in Nickel, per lb. ....	19@21c
Alum bronze. ....	19@21c
Bismuth, per lb. ....	\$1.45@1.50
Phosphorus, per lb. ....	48@50c
Magnesium. ....	\$2.75@3.00
Tungsten, per lb. ....	70c
Ferro-tungsten, 60 per cent. ....	60c

Variations in price depend chiefly on the size of the order.

### ACIDS.

Acetic is in good request, muriatic is moving briskly on contract, and sulphuric is unchanged. Blue vitriol is quiet. Only 50 bbls. oxalic acid were imported this week.

The exports from the United States in August amounted to \$12,653

### BRIMSTONE.

There are no arrivals. Spot best un-mixed second \$22@\$22.50 per ton and shipments \$21.15; thirds, \$19. The imports of brimstone into the United States in August were 11,109 tons.

### NITRATE OF SODA.

Demand is very quiet and quotations for all positions are nominally \$1.65 per 100 lbs. Odd lots can doubtless be had at \$1.62 $\frac{1}{2}$ . The United States imported 18,708 tons nitrate of soda in August.

### CHEMICALS.

Most of the business done in heavy chemicals is for future delivery, the little doing on spot being at advanced prices. Imports this week included 200 drums, 210 casks and 2 bbls. bleaching powder. Importers expect a curtailment of shipments from England when the Boer war is on, as the merchant vessels will be used for transporting troops to South Africa. Receipts of domestic goods at New York last week included 1055 sacks alkali and 250 drums caustic soda.

Caustic soda high test is quoted per 100 lbs. f. o. b. works at 1.77 $\frac{1}{2}$ @1.82 $\frac{1}{2}$  in New York, \$1.85@1.90. Bi-carbonate of soda is quoted per 100 lbs. f. o. b. works, \$1.12 $\frac{1}{2}$ @\$1.25. Chlorate of potash crystals in New York are quoted for domestic, \$8.75@9.00; foreign, \$9.25@9.37 $\frac{1}{2}$ ; powdered domestic at \$9.25@9.50, and foreign, 9.50@9.75.

### CHLORIDE OF LIME.

English 'prime' brands are quoted at 1.65@1.75 with £1.50@1.60 for other brands.

this Belt was as tight as a fiddle string, under about 1000 lbs. initial tension and yet was slipping. There is no slip now for it runs slack. CLING-SURFACE did it.

### CLING-SURFACE MANF. CO.,

167-172 VIRGINIA ST., BUFFALO N. Y.

Represented in Salt Lake City by the UTAH RUBBER & MANF. CO.



BROWN, DURRELL, & CO.

CLING-SURFACE MFG. CO.,

BUFFALO, N. Y.

DR. SRI.—Having tried Cling-Surface on my 12" dynamo belt (16 feet between centers), I have been able to carry full load with 22" sag on belt with no perceptible slip. It surpasses my expectations and I can recommend it to do all that is claimed for it, if directions are followed.

Yours respectfully,

E. B. PRESCOTT, Engineer.

### Perfect Cupels

Can be made by anyone with ease and dispatch with

### Galkins' Cupel Machines

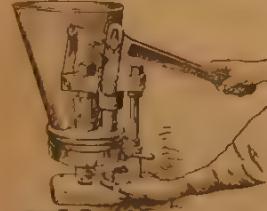
Compact, easily operated, can't get out of order, everlasting.

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LOS ANGELES, CAL.



The Automatic. This machine will make five sizes cupels of ideal perfection, 600 an hour. Three designs and grades.



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The illustration shows the gigantic pumping plant recently built by the Hercules Gas Engine Works at the Packer Ranch, Colusa Co. 80 h. p. Hercules Engine, pumping 7200 gallons a minute, 27 feet high. Burns Gasoline or Distillate oil. Cheapest power known. Gas, Gasoline and Oil Engines, 2 to 200 h. p. Send for Catalogue. HERCULES GAS ENGINE WORKS, 218 Bay St., San Francisco.



## FINANCIAL NOTES.

AVERAGE PRICES OF METALS.  
in New York per 100 lbs. from January 1st, 1899.

Month	Copper	Tin	Lead	Spelter
January	11.75	22.45	4.18	5.14
February	11.50	21.20	4.49	5.28
March	12.54	21.50	4.17	5.31
April	15.61	21.95	4.11	6.07
May	15.25	21.76	4.44	6.07
June	12.93	20.65	4.52	5.93
July	15.13	20.62	4.52	5.93
August	15.50	21.51	4.57	5.65
September	15.45	21.74	4.58	5.50
October				
November				
December				

Average.....

## AVERAGE MONTHLY PRICES OF SILVER.

In New York per ounce Troy, from January 1st, 1899, and for the years 1893 and 1897.

Month	1899	1893	1897
January	59.30	56.77	61.79
February	59.12	56.07	61.67
March	59.64	61.90	63.05
April	60.10	56.02	62.05
May	61.15	56.02	60.42
June	60.43	56.61	60.10
July	60.25	59.06	59.61
August	60.00	59.54	54.19
September	58.89	60.68	55.24
October	61.12	57.57	57.01
November	60.60	57.01	57.01
December	59.42	58.01	
Year	68.26	59.79	

## MONEY IN CIRCULATION.

Comparative statement of the circulation in the United States on Sept 1st 1899. Comparison being made with statement on August 1st, 1899.

Month	1899	1893	1897
January	59.30	56.77	61.79
February	59.12	56.07	61.67
March	59.64	61.90	63.05
April	60.10	56.02	62.05
May	61.15	56.02	60.42
June	60.43	56.61	60.10
July	60.25	59.06	59.61
August	60.00	59.54	54.19
September	58.89	60.68	55.24
October	61.12	57.57	57.01
November	60.60	57.01	57.01
December	59.42	58.01	
Year	68.26	59.79	

Total..... \$1,459,639,807 D. \$24,340,13

Gold and Silver certificates and currency are not included in this table. By adding the amounts given in this table with those in the following will give the

total amount coined or issued. The figures herewith are furnished by the Bureau of Statistics Treasury Department.

## MONEY IN TREASURY.

Comparative statement of changes of money in United States Treasury during Sept. 1st 1899, comparison being made with statement, on August 1st, 1898.

September 1.	Changes
Gold.....	\$19,956,760 L
Silver.....	420,195,172 D
Legal Tenders.....	36,550,592 L
Treasury & N.Y. Bk Notes.....	4,498,662 L
Totals.....	\$65,530,598 L

The Gold and Silver bullion on hand in the Treasury is not included in this statement

## GOLD AND SILVER EXPORTS AND IMPORTS.

At all United States ports, for the month of August, 1898, and 8 months ending August, 1898, and 1899:

August	1898	1899
Gold—		
Exports.....	\$1,495,968	\$2,099,062
Imports.....	15,795,811	5,391,411
Excess.....	\$13,300,903	1,700,649
Silver—		
Exports.....	\$1,779,478	\$3,197,270
Imports.....	3,651,741	3,179,73
Excess.....	\$2,151,755	\$14,531,7

RIGHT MONTHS ENDING AUGUST.

	1898	1899
Gold—		
Exports.....	\$9,970,133	\$12,394,943
Imports.....	110,533,475	31,674,527
Excess.....	\$100,565,362	\$84,316

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

## The Cleveland Mining and Stock Exchange Co.

New England Building, Cleveland, Ohio.

A Reliable Information Bureau for Miners and Investors to obtain FACTS Regarding Capital and Mines. Stocks and Mines listed. Send for prospectus.

## Morgan-Watson Mining and Construction Co.

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JAMES IRVING & CO.  
REFINERS

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Largest and most complete establishment in Southern California Cyanide and Mill Test.  
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\$35,000,000 in Dividends paid out by Utah Mines up to date.

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Weekly Market Report on application.  
Reference: Any Bank in Salt Lake City.

P. J. CONWAY &amp; CO.,

SALT LAKE CITY, UTAH

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\$6.00 per ton or wood \$4.00 per cord delivered; plenty of water; no objection to low grade ore if profit can be made by having large plant to amalgamate and concentrate; want 6 months working bond; no property considered unless owners are prepared to deposit certified check for expenses of engineer if property is not as represented

Address with price and full particulars

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METALLURGIST and experienced Assayer and Chemist, with practical experience in Copper and Lead smelting, desires position. Speaks Spanish, highest references, address "Globe", JOURNAL office.

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A GROUP of 4 Copper claims in Northern Arizona. By-product of gold and silver, recently discovered and show great promise will sell at a great bargain.

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A DEVELOPED, producing and dividend paying Gold Mine, machinery on ground in active and successful operation.

A large copper deposit partly developed, with splendid showing.

A fine gold-silver prospect partly developed, lack of capital reason for sale. For reports, maps, etc. Address

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TREMAIN Two Stamp Steam Mill at Tucson, Arizona. 15-H. P. Boiler, Pump, and everything complete, set up ready for work. In excellent condition, used less than six months.

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PROSPECTORS having locations of this nature and wishing to sell at once for cash, will do well to address with full particulars.

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A 60-ton copper smelting plant, consisting of two 30-ton furnaces, one of which has new seamless liner. Plant is complete in every detail. Also an 80-ton Silver-Lead Furnace, entirely new, never having been set up. All of the above located immediately adjacent to railroad. Enquire of GARDINER, WORTHEN & GOSS, dealers in Milling and Mill Supplies, Tucson, A. T.



## INCORPORATED MINES PAYING DIVIDENDS.

NAME OF MINE	LOCATION	No. of Shares	Capital Stock	Per Value	Amount of Dividend	Date of Last Dividend	Total Amount Paid in Dividends		Kind of Metal Produced
							Dividend	Dividend	
1 Aetna Cons.	California	100,000	500,000	\$ 5	\$ 10	Oct 1899		\$ 105,000	Q.
2 Alamo	Utah	125,000	125,000	1	2	April 1899		2,500	G, C, I.
3 Alaska, Trendwell	Alaska	200,000	6,000,000	25	37 1/2	July 1899		4,115,000	G.
4 Alaska Mexican	Alaska	200,000	1,000,000	5	10	July 1899		111,031	G.
5 Anaconda Copper	Montana	1,200,000	30,000,000	25	200	Nov 1899		12,150,000	C.
6 Anchorage Leland	Colorado	600,000	800,000	1	03	Apr 1899		198,000	G.
7 American Gold	Colorado	300,000	3,000,000	10	09	June 1899		431,000	G, S, I.
8 American Coal	Maryland	60,000	1,500,000	25	1 25	Sept 1899		727,600	Coal
9 American Zinc, Lead and Smelting	Missouri	200,000	500,000	25	10	Oct 1899		10,000	Z, L.
10 Aurora	Michigan	100,000	2,500,000	25	50	June 1899		800,000	I.
11 Argonaut	California	200,000	2,000,000	10	10	Aug 1899		340,000	
12 Bald Butte	Montana	250,000	250,000	1	06	Sept 1899		717,141	G, C, S.
13 Bonanza Development	New Mexico	300,000	3,000,000	10	3 60	June 1899		1,500,000	
14 Boston & California	California	600,000	600,000	1	06	June 1899		72,000	
15 Boston and Colorado Smelting	Colorado	15,000	750,000	50	5 00	April 1899		375,000	
16 Boston & Montana Con.	Montana	150,000	3,750,000	25	10 00	Aug 1899		12,275,000	G, C, S.
17 Breece	Colorado	200,000	5,000,000	25	05	Sept 1899		69,000	L.
18 Bullion Beck and Champion	Utah	100,000	1,000,000	10	10	Sept 1899		2,408,100	G, S.
19 Bunker Hill and Sullivan	Idaho	300,000	3,000,000	10	07	May 1899		705,000	S, L.
20 Caribou	British Col.	80,000	800,000	1	01 1/2	Feb 1899		248,965	G.
21 Calumet & Hecla	Michigan	10,000	2,500,000	25	20 00	Sept 1899		64,850,000	C.
22 Centennial Eureka	Utah	30,000	1,500,000	50	60	Aug 1899		2,150,000	S, L.
23 Central Lead	Missouri	10,000	1,000,000	100	50	Sept 1899		127,000	
24 Charleston	S. Carolina	10,000	1,000,000	100	2 00	June 1899		200,000	
25 Colorado Smelting	Montana	100,000	1,000,000	10	1 00	Jan 1899		1,945,000	G, S, C.
26 Consolidated Tiger and Poorman	Idaho	1,000,000	1,000,000	1	02	Dec 1898		20,000	G, S.
27 Creston Leasing	Colorado	1,000,000	1,000,000	1	01	Dec 1898		54,00	
28 Crowned King	Arizona	600,000	6,000,000	10	02	Dec 1898		232,000	G, S, L.
29 De Lamar	Idaho	40,000	2,000,000	5	12	May 1899		2,346,000	G, S.
30 Deer Trail No 2	Washington	1,000,000	1,000,000	1	25	Sept 1899		10,000	
31 Doe Run	Missouri	5,000	500,000	100	50	Sept 1899		85,000	L.
32 Empire State, Idaho	Idaho	75,000	750,000	10	30	Sept 1899		229,375	
33 Fanny Rawlings	Colorado	1,000,000	1,000,000	1	01	Aug 1899		20,000	G, S.
34 Ferra-Haggerty	Wyoming	1,000,000	1,000,000	1	00 1/2	Mar 1899		5,000	C, G, S.
35 Garfield Consolidated	Colorado	1,200,000	1,200,000	1	01	May 1899		34,000	G.
36 Golden Star	Ontario, Canada	100,000	100,000	1	01	July 1899		41,000	
37 Gold Coin of Victor	Colorado	1,000,000	1,000,000	1	01	Sept 1899		240,000	G.
38 Gold King	Colorado	1,000,000	1,000,000	1	03	July 1899		60,000	G.
39 Golden Cycle	Colorado	200,000	1,000,000	5	05	Sept 1899		228,500	
40 Grand Central	Utah	250,000	250,000	1	24	Sept 1899		686,250	G, S, C, L.
41 Gwin	California	20,000	1,000,000	50	26	Aug 1899		81,500	G.
42 Grass Valley Exploration	California	50,000	100,000	2	25	July 1899		12,500	
43 Helena and Friesco	Idaho	500,000	2,500,000	5	25	June 1899		550,000	S, L.
44 Highland	S. Dakota	100,000	10,000,000	100	20	July 1899		3,924,718	G.
45 Holy Terror	S. Dakota	300,000	300,000	1	01	July 1899		142,000	G.
46 Home Stake	S. Dakota	125,000	12,500,000	100	50	Sept 1899		7,828,760	G.
47 Horn Silver	Utah	400,000	10,000,000	25	05	July 1899		5,270,000	S, L.
48 Idaho	British Col.	500,000	500,000	1	05 1/2	Jan 1899		292,000	
49 Isabella	Colorado	2,250,000	2,250,000	1	01	Sept 1899		472,500	G.
50 Jack Pot	Colorado	1,000,000	1,000,000	1	04	Sept 1899		75,000	G.
51 Jamison	California	300,000	3,900,000	10	10	April 1899		50,700	
52 Lake Superior Iron	Michigan	84,000	2,100,000	25	1 00	Feb 1899		7,36,000	L.
53 Lillie	Colorado	1,000,000	1,000,000	1	05	Sept 1899		279,110	G.
54 Modoc	Colorado	500,000	500,000	1	02	Sep 1899		170,000	G.
55 Montana Ltd	Montana	660,000	3,300,000	5	12	Apr 1899		2,097,557	G, S.
56 Montana Ore Purchasing	Montana	40,000	1,000,000	25	1 00	Sept 1899		1,20,000	
57 Morning Star	California	2,400	240,000	100	3 00	Sept 1899		714,600	G.
58 Mercur	Utah	200,000	5,000,000	25	12 1/2	July 1899		1,791,000	G.
59 Mammoth	Utah	400,000	10,000,000	25	15	Sept 1899		1,530,000	G, S, C, L.
60 Mead	California	2,000,000	2,000,000	1	20	June 1899		120,000	G.
61 Monument	Colorado	300,000	300,000	1	01	Dec 1898		12,624	
62 Moulton	Montana	400,000	2,000,000	5	06	Feb 1899		480,000	
63 Mt. Shasta	California	20,000	100,000	5	30	May 1899		6,000	
64 New York & Hon. Rosario	Central A.	150,000	1,500,000	10	10	Sept 1899		1,110,000	S, G.
65 Napa Cons.	California	100,000	700,000	7	30	Oct 1899		1,010,000	Q.
66 New Idria Quicksilver	California	100,000	500,000	5	30	Oct 1899		170,000	Q.
67 North Star	California	200,000	2,000,000	10	25	Apr 1899		550,000	G.
68 Original Empire	California	50,000	5,000,000	100	1 00	May 1899		500,000	G.
69 Osceola	Michigan	60,000	1,250,000	25	3 00	June 1899		2,301,500	C.
70 Parrot	Montana	230,000	2,800,000	10	1 50	May 1899		2,870,898	C.
71 Pennsylvania Consolidated	California	51,500	5,150,000	10	20	Sept 1899		105,575	
72 Pioneer	California	100,000	1,000,000	10	12 1/2	Mar 1899		62,500	G.
73 Portland	Colorado	8,000,000	8,000,000	1	02	Sept 1899		2,347,080	G, S.
74 Plumbago	California	300,000	300,000	1	15	Jan 1899		45,000	G.
75 Quicksilver Pref.	California	43,000	4,300,000	100	50	May 1899		1,815,411	Q.
76 Quicksilver Consolidated	California	57,000	5,700,000	100	40	July 1899		814,867	Q.
77 Quincy	Michigan	100,000	2,500,000	25	6 00	August 1899		11,070,000	C.
78 *Republic Consolidated	Washington	3,000,000	3,000,000	1	01	Sept 1899		323,000	G.
79 Rambler-Cariboo	British Col.	1,000,000	1,000,000	1	01	April 1899		50,000	
80 Royal Consolidated	British Col.	2,500,000	2,500,000	1	01	June 1899		1,050,000	G.
81 Sacramento	Utah	1,000,000	5,000,000	5	00 1/2	Sept 1899		133,000	G.
82 Small Hopes Consolidated	Colorado	250,000	5,000,000	20	10	Feb 1899		3,825,000	S.
83 South Swansea	Utah	150,000	150,000	1	05	Sept 1899		150,000	S, L.
84 Standard	Idaho	500,000	500,000	1	06	Apr 1899		1,745,00	G, S.
85 Standard Consolidated	California	200,000	20,000,000	100	10	Aug 1899		3,879,226	G, S.
86 St. Joseph	Missouri	30,000	3,000,000	10	50	June 1899		2,455,500	L.
87 Silver King	Utah	150,000	5,000,000	20	25	Sept 1899		2,250,010	S, L, G.
88 Smuggler	Colorado	1,000,000	1,000,000	1	01	Sept 1899		1,185,000	S, L, Z.
89 Swansea	Utah	100,000	500,000	5	05	Oct 1899		211,000	S, L.
90 Tamarack	Michigan	60,000	1,500,000	15	4 00	June 1899		5,910,000	C.
91 Tomboy	Colorado	200,000	2,000,000	10	4 00	May 1899		730,000	G.
92 Utah	Utah	100,000	1,000,000	10	02	Jan 1899		179,000	G.
93 Vindicator Consolidated	Colorado	1,500,000	1,500,000	1	05	July 1899		263,750	G.
94 War Eagle Consolidated	British Col.	2,000,000	1,000,000	1	01 1/2	Sept 1899		114,000	
95 Wolverine	Michigan	60,000	2,500,000	25	1 50	Oct 1899		270,001	C.
96 Yellow Aster	California	100,000	1,000,000	10	10	Sept 1899		253,789	G.

S. Silver; G. Gold; L. Lead; O. Copper; Q. Quicksilver; I. Iron; Z. Zinc.  
N. B.—Companies not listed paid nothing in the last twelve months. \*Paid since consolidation, \$203,000; Republic paid \$120,000 under old management.

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Designed with some Regard for the Laws of Concentration

The perfect vanner motion given to the pulp by our head motion together with the freedom from "jumping" resulting from the use of rigid guides used, explains why the Cammett riffles never "pocket" and why the table has such a great capacity for handling slime.

The continuous grooves and riffles extending from end to end of the table maintains the greatest possible margin of safety between the concentrates discharge and the tailings.

Thoroughly protected by strong patents

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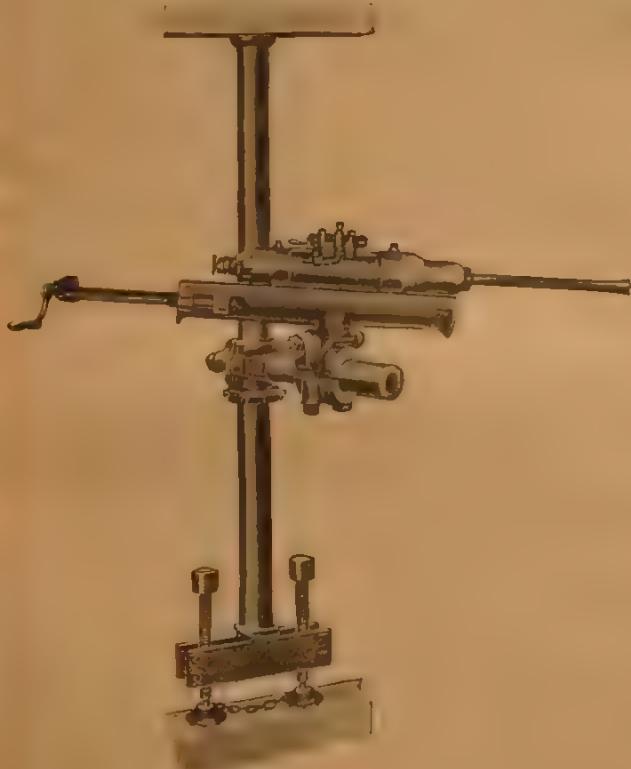
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It requires less than one-half the air required to operate rock drills of the ordinary piston type.

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And other Good Points all explained in Catalogue, Sent on Application.



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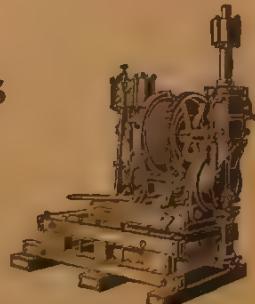
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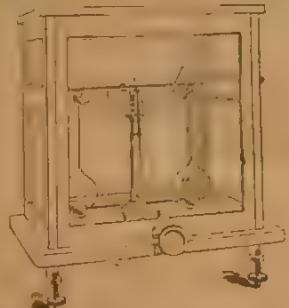


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Aluminum Beam, Agate Knives and Plates. Sensibility 1-100 mg. The Best Low-Price Assay Balance on the Market. Send for Circular.

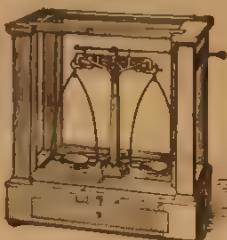
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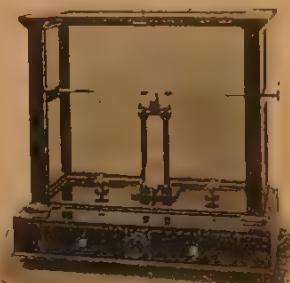
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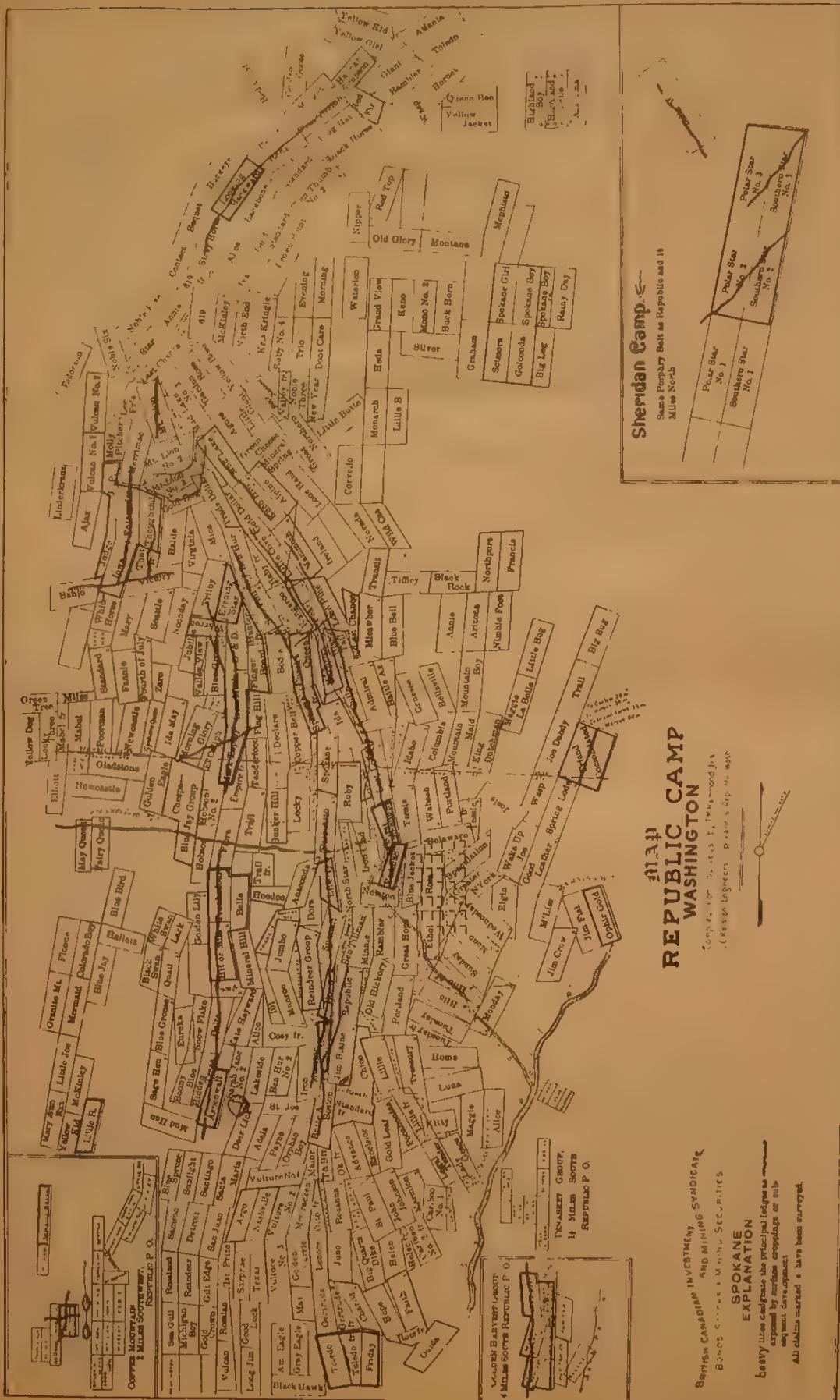
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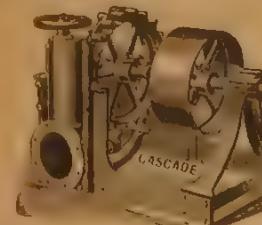
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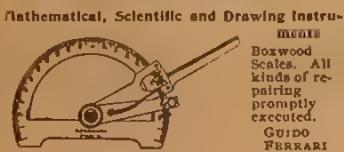
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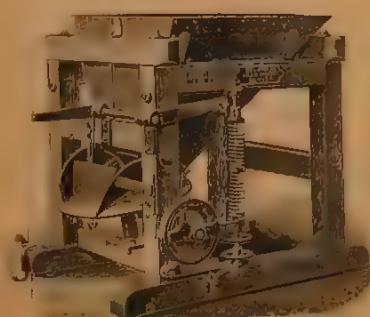
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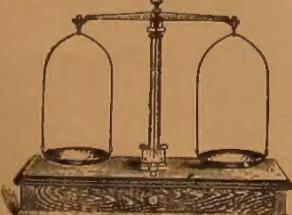
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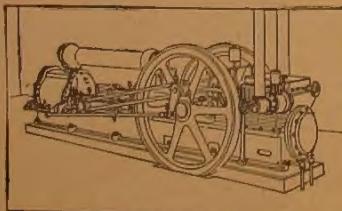
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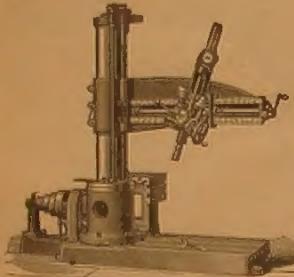
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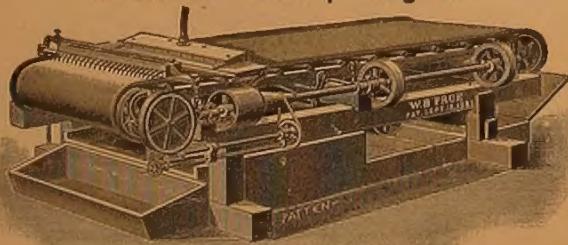
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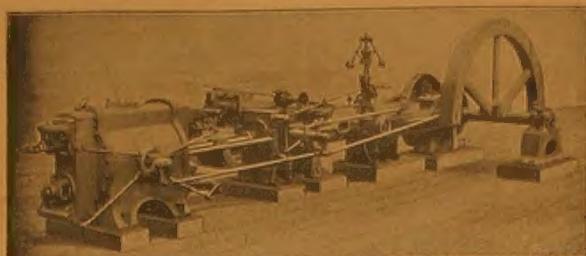
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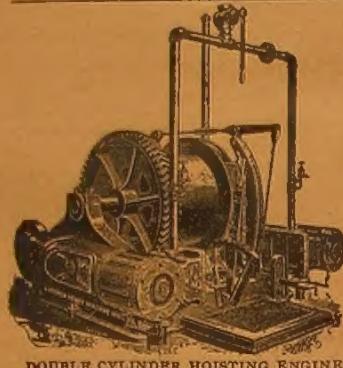
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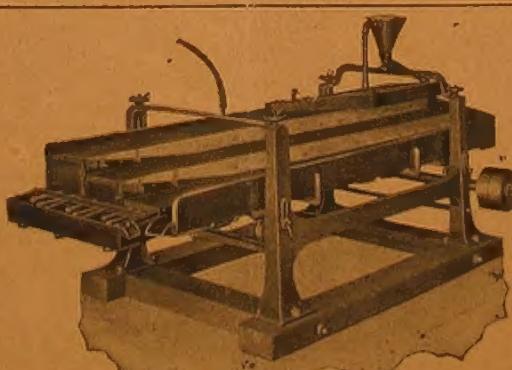
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